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**INVENTORY**

# Evaluation of Elastomeric Polymers

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Dec 95

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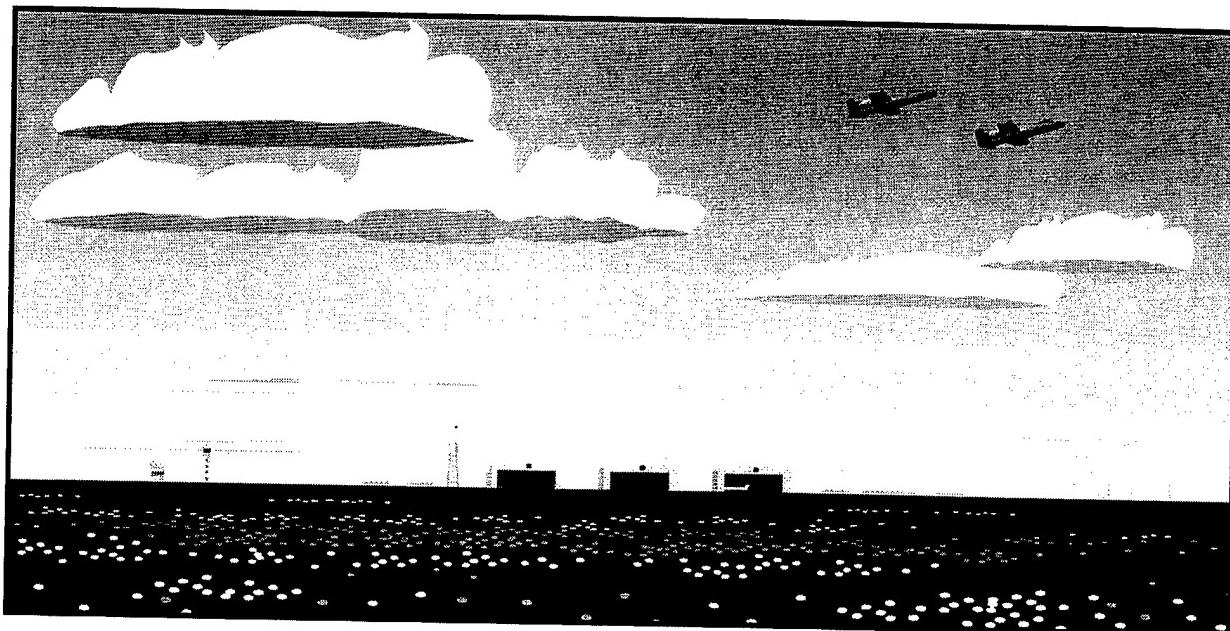
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McClellan Air Force Base

# Evaluation of Elastomeric Polymer Filter Media



## Technology Demonstration Technical Memorandum

FINAL  
Volume II: Appendices

DECEMBER 1995

AQ M01-03-0726

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Title

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Laura Peña  
Telephone  
210-536-1431

Signature

Laura PeñaFor DTIC Use Only  
AQ Number

M01-03-0726

EVALUATION OF ELASTOMERIC POLYMER FILTER MEDIA  
TECHNOLOGY DEMONSTRATION TECHNICAL MEMORANDUM

VOLUME II

**FINAL**

PREPARED FOR:

McCLELLAN AIR FORCE BASE/EMR  
5050 DUDLEY BOULEVARD, SUITE 3  
McCLELLAN AFB, CALIFORNIA 95652-1389

12 December 1995

PREPARED BY:  
Radian Corporation  
10389 Old Placerville Road  
Sacramento, California 95827

USAF CONTRACT NO. F04699-93-D-0018/8025  
CONTRACTOR CONTRACT NO. 602-125, DELIVERY ORDER NO. 8025

United States Air Force  
Sacramento Air Logistics Command Environmental Management and Restoration  
McClellan AFB, California 95652-1036

**APPENDIX A**

**Analytical Data Sheets**

# @ AIR TOXICS LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

## WORK ORDER #: 9509057A

### Work Order Summary

**CLIENT:** Ms. Carol Kontonickas  
Radian Corporation  
10389 Old Placerville Road  
Sacramento, CA 95827

**BILL TO:** Subcontracts Payable  
Radian Corporation  
P.O. Box 201088  
Austin, TX 78720-1088

**PHONE:** 916-857-7448  
**FAX:** 916-362-2318  
**DATE RECEIVED:** 9/7/95  
**DATE COMPLETED:** 9/14/95

**INVOICE #** 7960  
**SUBCONTRACT #** S00256066  
**PROJECT #** 602-125-80-10 McClellan Polymer  
**AMOUNT\$:** \$205.00

<b>FRACTION #</b>	<b>NAME</b>	<b>TEST</b>	<b>RECEIPT</b>	<b>VAC./PRES.</b>	<b>PRICE</b>
01A	POLY VN 315-001	TO-14	3.0 "Hg	NA	\$205.00
02A	Method Spike	TO-14	NA	NC	
03A	Lab Blank	TO-14	NA	NC	

CERTIFIED BY: Isabella C. Cuneo  
Laboratory Director

DATE: 9/14/95

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA 95630  
(916) 985-1000 • (800) 985-5955 • FAX (916) 985-1020

# AIR TOXICS LTD.

SAMPLE NAME: POLY VN 315-001

ID#: 9509057A-01A

EPA METHOD TO-14 GC/MS Full Scan

File Name:

5090807

Date of Collection: 9/7/95

Dil. Factor:

2200

Date of Analysis: 9/8/95

Analyst's Initials:

BM

Compound	Det. Limit (ppbv)	Amount (ppbv)
Vinyl Chloride	1100	Not Detected
1,1-Dichloroethene	1100	Not Detected
Freon 113	1100	Not Detected
cis-1,2-Dichloroethene	1100	26000 ✓
Chloroform	1100	2600 ✓
1,1,1-Trichloroethane	1100	Not Detected
Benzene	1100	5000 ✓
Trichloroethene	1100	1200000 E ✓ ↗+
Toluene	1100	1900 ✓
Tetrachloroethene	1100	Not Detected
m,p-Xylene	1100	7500 ✓
o-Xylene	1100	6900 ✓
Acetone	4400	Not Detected

E = Exceeds instrument calibration range, but within linear range.

Container Type: 1 Liter Summa Canister

Surrogates	% Recovery	Method Limits
Octafluorotoluene	82	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	81	70-130

# AIR TOXICS LTD.

SAMPLE NAME: Method Spike

ID#: 9509057A-02A

EPA METHOD TO-14 GC/MS Full Scan

File Name:	5090802 / 5090803	Date of Collection:	NA
Dil. Factor:	1.0	Date of Analysis:	9/8/95
Analyst's Initials:	MH		

Compound	Det. Limit (ppbv)	% Recovery
Vinyl Chloride	0.50	76
1,1-Dichloroethene	0.50	96
Freon 113	0.50	106
cis-1,2-Dichloroethene	0.50	107
Chloroform	0.50	99
1,1,1-Trichloroethane	0.50	101
Benzene	0.50	102
Trichloroethene	0.50	127
Toluene	0.50	120
Tetrachloroethene	0.50	114
m,p-Xylene	0.50	94
o-Xylene	0.50	99
Acetone	2.0	70

Container Type: NA

Surrogates	% Recovery	Method Limits
Octafluorotoluene	87 / 83	70-130
Toluene-d8	98 / 99	70-130
4-Bromofluorobenzene	84 / 84	70-130

# AIR TOXICS LTD.

SAMPLE NAME: Lab Blank

ID#: 9509057A-03A

EPA METHOD TO-14 GC/MS Full Scan

File Name:

5090806

Date of Collection: NA

Dil. Factor:

1.0

Date of Analysis: 9/8/95

Analyst's Initials:

MH

Compound	Det. Limit (ppbv)	Amount (ppbv)
Vinyl Chloride	0.50	Not Detected
1,1-Dichloroethene	0.50	Not Detected
Freon 113	0.50	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected
Chloroform	0.50	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected
Benzene	0.50	Not Detected
Trichloroethene	0.50	Not Detected
Toluene	0.50	Not Detected
Tetrachloroethene	0.50	Not Detected
m,p-Xylene	0.50	Not Detected
o-Xylene	0.50	Not Detected
Acetone	2.0	Not Detected

Container Type: NA

## Surrogates

Octafluorotoluene

% Recovery

86

Method Limits

70-130

Toluene-d8

95

70-130

4-Bromofluorobenzene

79

70-130



# @ AIR TOXICS LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

## WORK ORDER #: 9509057B

### Work Order Summary

<b>CLIENT:</b>	Ms. Carol Kontonickas Radian Corporation 10389 Old Placerville Road Sacramento, CA 95827	<b>BILL TO:</b> Subcontracts Payable Radian Corporation P.O. Box 201088 Austin, TX 78720-1088
<b>PHONE:</b>	916-857-7448	<b>INVOICE #</b> 7960
<b>FAX:</b>	916-362-2318	<b>SUBCONTRACT #</b> S00256066
<b>DATE RECEIVED:</b>	9/7/95	<b>PROJECT #</b> 602-125-80-10 McClellan Polymer
<b>DATE COMPLETED:</b>	9/14/95	<b>AMOUNT\$:</b> \$50.00

<b>FRACTION #</b>	<b>NAME</b>	<b>TEST</b>	<b>RECEIPT</b>	
			<b>VAC./PRES.</b>	<b>PRICE</b>
01A	POLY VN 315-001	Mod. Method 18	3.0 "Hg	\$50.00
02A	Method Spike	Mod. Method 18	NA	NC
03A	Lab Blank	Mod. Method 18	NA	NC

*S  
9/26/95*

CERTIFIED BY: Sabella C. Curme  
*for* Laboratory Director

DATE: 9/14/95

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA 95630  
(916) 985-1000 • (800) 985-5955 • FAX (916) 985-1020

# AIR TOXICS LTD.

## Vinyl Chloride by Modified EPA Method 18 Pre-Fractionator GC/PID

Field Sample I.D.	Lab Sample I.D.	File Name	Sample Date	Analyzed For	Dilution Factor	Det. Limit (ppbv)	Amount (ppbv)
POLY VN 315-001	9509057B-01A	A090817	9/7/95	Vinyl Chloride	2.2	110	3100
Lab Blank	9509057B-03A	A090816	NA	Vinyl Chloride	1.0	50	Not Detected
Spiked Sample							% Recovery
Method Spike	9509057B-02A	A090814	NA	Vinyl Chloride	1.0	50	97

Analysis Date: 9/8/95

Container Type: 1 Liter Summa Canister

Analyst's Initials: JS

Comments: NA = Not Applicable



# @ AIR TOXICS LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

## WORK ORDER #: 9509097A Work Order Summary

**CLIENT:** Ms. Carol Kontonickas  
Radian Corporation  
10389 Old Placerville Road  
Sacramento, CA 95827

**BILL TO:** Subcontracts Payable  
Radian Corporation  
P.O. Box 201088  
Austin, TX 78720-1088

**PHONE:** 916-857-7448  
**FAX:** 916-362-2318  
**DATE RECEIVED:** 9/13/95  
**DATE COMPLETED:** 9/22/95

**INVOICE #** 8033  
**SUBCONTRACT #** S00256066  
**PROJECT #** 602-125-80-10 McClellan Polymer  
**AMOUNT\$:** \$410.00

<b>FRACTION #</b>	<b>NAME</b>	<b>TEST</b>	<b>RECEIPT</b>	<b>PRICE</b>
			<u>VAC/PRES.</u>	
01A	POLY AIN 002	TO-14	6.5 "Hg	\$205.00
02A	POLY AEN 003	TO-14	6.5 "Hg	\$205.00
03A	Method Spike	TO-14	NA	NC
04A	Lab Blank	TO-14	NA	NC

*S  
9/27/95  
2 samples inc  
JT  
Spike out  
high*

CERTIFIED BY: Leanda J. Turner  
Laboratory Director

DATE: 9/22/95

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA 95630  
(916) 985-1000 • (800) 985-5955 • FAX (916) 985-1020

# AIR TOXICS LTD.

SAMPLE NAME: POLY AIN 002

ID#: 9509097A-01A

EPA METHOD TO-14 GC/MS Full Scan

File Name:

9091308

Date of Collection: 9/12/95

Dil. Factor:

3200

Date of Analysis: 9/13/95

Analyst's Initials:

BJM

Compound	Det. Limit (ppbv)	Amount (ppbv)
Vinyl Chloride	1600	2900
1,1-Dichloroethene	1600	Not Detected
Freon 113	1600	Not Detected
cis-1,2-Dichloroethene	1600	19000
Chloroform	1600	2200
1,1,1-Trichloroethane	1600	Not Detected
Benzene	1600	4300
Trichloroethene	1600	660000 E
Toluene	1600	1800
Tetrachloroethene	1600	Not Detected
m,p-Xylene	1600	6900
o-Xylene	1600	5300
Acetone	6400	Not Detected

E = Exceeds Instrument calibration range, but within linear range.

Container Type: 1 Liter Summa Canister

#### Surrogates

Octafluorotoluene

#### % Recovery

99

#### Method Limits

70-130

Toluene-d8

108

70-130

4-Bromofluorobenzene

101

70-130

# AIR TOXICS LTD.

SAMPLE NAME: POLY AEN 003

ID#: 9509097A-02A

EPA METHOD TO-14 GC/MS Full Scan

**File Name:** 9091309 **Date of Collection:** 9/12/95  
**Dil. Factor:** 570 **Date of Analysis:** 9/13/95  
**Analyst's Initials:** BJM

Compound	Det. Limit (ppbv)	Amount (ppbv)
Vinyl Chloride	290	2000 ↓ +
1,1-Dichloroethene	290	390
Freon 113	290	Not Detected
cis-1,2-Dichloroethene	290	3500
Chloroform	290	700
1,1,1-Trichloroethane	290	Not Detected
Benzene	290	Not Detected
Trichloroethene	290	71000
Toluene	290	Not Detected
Tetrachloroethene	290	Not Detected
m,p-Xylene	290	Not Detected
o-Xylene	290	Not Detected
Acetone	1100	Not Detected

**Container Type:** 1 Liter Summa Canister

Surrogates	% Recovery	Method Limits
Octafluorotoluene	110	70-130
Toluene-d8	117	70-130
4-Bromofluorobenzene	105	70-130

# AIR TOXICS LTD.

SAMPLE NAME: Method Spike

ID#: 9509097A-03A

EPA METHOD TO-14 GC/MS Full Scan

File Name:

9091302

Date of Collection: NA

Dil. Factor:

1.0

Date of Analysis: 9/13/95

Analyst's Initials:

DP

Compound	Det. Limit (ppbv)	% Recovery
Vinyl Chloride	0.50	138 Q ✓
1,1-Dichloroethene	0.50	108
Freon 113	0.50	108
cis-1,2-Dichloroethene	0.50	106
Chloroform	0.50	102
1,1,1-Trichloroethane	0.50	102
Benzene	0.50	112
Trichloroethene	0.50	97
Toluene	0.50	102
Tetrachloroethene	0.50	91
m,p-Xylene	0.50	93
o-Xylene	0.50	98
Acetone	2.0	101

Q = Exceeds Quality Control limits.

Container Type: NA

## Surrogates

	% Recovery	Method Limits
Octafluorotoluene	96	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	104	70-130

# AIR TOXICS LTD.

SAMPLE NAME: Lab Blank

ID#: 9509097A-04A

EPA METHOD TO-14 GC/MS Full Scan

File Name:

9091305

Date of Collection: NA

Dil. Factor:

1.0

Date of Analysis: 9/13/95

Analyst's Initials:

DP

Compound	Det. Limit (ppbv)	Amount (ppbv)
Vinyl Chloride	0.50	Not Detected
1,1-Dichloroethene	0.50	Not Detected
Freon 113	0.50	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected
Chloroform	0.50	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected
Benzene	0.50	Not Detected
Trichloroethene	0.50	Not Detected
Toluene	0.50	Not Detected
Tetrachloroethene	0.50	Not Detected
m,p-Xylene	0.50	Not Detected
o-Xylene	0.50	Not Detected
Acetone	2.0	Not Detected

Container Type: NA

#### Surrogates

Octafluorotoluene

% Recovery

Method Limits

93

70-130

Toluene-d8

99

70-130

4-Bromofluorobenzene

97

70-130

# CHAIN OF CUSTODY RECORD

USE A BALLPOINT PEN AND PRESS FIRMLY  
THE INSTRUCTIONS FOR FILLING OUT  
THIS FORM ARE ON THE BACK

**RADIANT**  
CORPORATION  
10389 ROCKWICHAM ROAD, SACRAMENTO, CA 95827  
(916) 362-5332

TASK OR SUB TASK (one per form):  
TUTYLICER EVALUATION

LABORATORY NAME & ADDRESS:

AIC TOXICS LTD.

CONTRACT NAME: McCLELLAN

CHARGE NUMBER: 602 125-XJ-10

180 Main Street, Suite 13

Sacramento, CA 95814

SAMPLE NUMBER

COLLECTION DATE

TIME

SAMPLES

NUMBER OF UNITS

UNIT QUANTITY

MATRIX

CODE

PRESERVATIVE

TYPE OF ANALYSIS

DISPOSAL INITIALS

DISPOSAL DATE

CC

101A AIN 462 9/12/95 1615 661 1 1 LITER V Nuv. TU-14 + PFCAC 6/14/95

101Y AEN 463 9/12/95 1615 661 1 1 LITER V Nuv. TU-14 + PFCAC 6/14/95

RELEASED BY DATE TIME COMMENTS: Custody Seal intact? Y N None (initials)

RECEIVED BY DATE TIME Condition upon receipt good Hand Delivery (initials)

RElinquished BY DATE TIME

DISPOSED BY DATE TIME

WHITE - COORDINATOR / GOLDENROD - PROJECT DIRECTOR / PINK - SAMPLE CONTROL / YELLOW - LABORATORY / BLUE - LABORATORY RECEIPT

TAKE TIME TUT CURES

# @ AIR TOXICS LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

## WORK ORDER #: 9509097B

### Work Order Summary

<b>CLIENT:</b>	Ms. Carol Kontonickas Radian Corporation 10389 Old Placerville Road Sacramento, CA 95827	<b>BILL TO:</b> Subcontracts Payable Radian Corporation P.O. Box 201088 Austin, TX 78720-1088
<b>PHONE:</b>	916-857-7448	<b>INVOICE #</b> 8033
<b>FAX:</b>	916-362-2318	<b>SUBCONTRACT #</b> S00256066
<b>DATE RECEIVED:</b>	9/13/95	<b>PROJECT #</b> 602-125-80-10 McClellan Polymer
<b>DATE COMPLETED:</b>	9/22/95	<b>AMOUNT\$:</b> \$100.00

<b>FRACTION #</b>	<b>NAME</b>	<b>TEST</b>	<b>RECEIPT</b>	<b>VAC./PRES.</b>	<b>PRICE</b>
01A	POLY AIN 002	Mod. Method 18	3	6.5 "Hg	\$50.00
02A	POLY AEN 003	Mod. Method 18	9/27/95	6.5 "Hg	\$50.00
03A	Method Spike	Mod. Method 18	OK	NA	NC
04A	Lab Blank	Mod. Method 18	OK	NA	NC

3  
9/27/95  
OK

CERTIFIED BY: Jinde S. Freeman  
Laboratory Director

DATE: 9/22/95

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA 95630  
(916) 985-1000 • (800) 985-5955 • FAX (916) 985-1020

# AIR TOXICS LTD.

## Vinyl Chloride by Modified EPA Method 18 Pre-Fractionator GC/PID

Field Sample I.D.	Lab Sample I.D.	File Name	Sample Date	Analyzed For	Dilution Factor	Det. Limit (ppbv)	Amount (ppbv)
POLY AIN 002	9509097B-01A	A0913005	9/12/95	Vinyl Chloride	2.6	130	3700
POLY AEN 003	9509097B-02A	A0913006	9/12/95	Vinyl Chloride	2.6	130	4000
Lab Blank	9509097B-04A	A0913002	NA	Vinyl Chloride	1.0	50	Not Detected
Spiked Sample							% Recovery
Method Spike	9509097B-03A	A0913001	NA	Vinyl Chloride	1.0	50	108

Analysis Date: 9/13/95

Container Type: 1 Liter Summa Canister

Analyst's Initials: JS

Comments: NA = Not Applicable



# @ AIR TOXICS LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

## WORK ORDER #: 9509107A Work Order Summary

**CLIENT:** Ms. Carol Kontonickas  
Radian Corporation  
10389 Old Placerville Road  
Sacramento, CA 95827

**BILL TO:** Subcontracts Payable  
Radian Corporation  
P.O. Box 201088  
Austin, TX 78720-1088

**PHONE:** 916-857-7448  
**FAX:** 916-362-2318  
**DATE RECEIVED:** 9/14/95  
**DATE COMPLETED** 9/22/95

**INVOICE #** 8034  
**SUBCONTRACT #** S00256066  
**PROJECT #** 602-125-80-10 McClellan Polymer  
**AMOUNT\$:** \$820.00

<b>FRACTION #</b>	<b>NAME</b>	<b>TEST</b>	<b>RECEIPT</b>	
			<b>VAC/PRES.</b>	<b>PRICE</b>
01A	POLY AIN 004	TO-14	5.5 "Hg	\$205.00
02A	POLY AEN 005	TO-14	6.0 "Hg	\$205.00
03A	POLY AEX 006	TO-14	5.5 "Hg	\$205.00
04A	POLY AEN 007 *	TO-14	5.5 "Hg	\$205.00
05A	Method Spike	TO-14	NA	NC
06A	Lab Blank	TO-14	NA	NC

CERTIFIED BY: Judie A. Fruin  
Laboratory Director

DATE: 9/22/95

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA 95630  
(916) 985-1000 • (800) 985-5955 • FAX (916) 985-1020

# AIR TOXICS LTD.

SAMPLE NAME: POLY AIN 004

ID#: 9509107A-01A

EPA METHOD TO-14 GC/MS Full Scan

File Name:

9091407

Date of Collection: 9/13/95

Dil. Factor:

4900

Date of Analysis: 9/14/95

Analyst's Initials:

BJM

Compound	Det. Limit (ppbv)	Amount (ppbv)
Vinyl Chloride	2500	Not Detected
1,1-Dichloroethene	2500	Not Detected
Freon 113	2500	Not Detected
cis-1,2-Dichloroethene	2500	23000
Chloroform	2500	2700
1,1,1-Trichloroethane	2500	Not Detected
Benzene	2500	4700
Trichloroethene	2500	780000
Toluene	2500	Not Detected
Tetrachloroethene	2500	Not Detected
m,p-Xylene	2500	7900
o-Xylene	2500	6400
Acetone	9800	Not Detected

Container Type: 1 Liter Summa Canister

<u>Surrogates</u>	<u>% Recovery</u>	<u>Method Limits</u>
Octafluorotoluene	104	70-130
Toluene-d8	105	70-130
4-Bromofluorobenzene	99	70-130

# AIR TOXICS LTD.

SAMPLE NAME: POLY AEN 005

ID#: 9509107A-02A

EPA METHOD TO-14 GC/MS Full Scan

File Name:

9091408

Date of Collection: 9/13/95

Dil. Factor:

2500

Date of Analysis: 9/14/95

Analyst's Initials:

BJM

Compound	Det. Limit (ppbv)	Amount (ppbv)
Vinyl Chloride	1300	Not Detected
1,1-Dichloroethene	1300	Not Detected
Freon 113	1300	Not Detected
cis-1,2-Dichloroethene	1300	12000
Chloroform	1300	1300
1,1,1-Trichloroethane	1300	Not Detected
Benzene	1300	1900
Trichloroethene	1300	340000
Toluene	1300	Not Detected
Tetrachloroethene	1300	Not Detected
m,p-Xylene	1300	Not Detected
o-Xylene	1300	Not Detected
Acetone	5000	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	% Recovery	Method Limits
Octafluorotoluene	108	70-130
Toluene-d8	109	70-130
4-Bromofluorobenzene	102	70-130

# AIR TOXICS LTD.

SAMPLE NAME: POLY AEX 006

ID#: 9509107A-03A

EPA METHOD TO-14 GC/MS Full Scan

File Name:	9091409	Date of Collection:	9/13/95
Dil. Factor:	3500	Date of Analysis:	9/14/95
Analyst's Initials:	BJM		

Compound	Det. Limit (ppbv)	Amount (ppbv)
Vinyl Chloride	1800	Not Detected
1,1-Dichloroethene	1800	Not Detected
Freon 113	1800	Not Detected
cis-1,2-Dichloroethene	1800	19000
Chloroform	1800	2000
1,1,1-Trichloroethane	1800	Not Detected
Benzene	1800	3200
Trichloroethene	1800	540000
Toluene	1800	Not Detected
Tetrachloroethene	1800	Not Detected
m,p-Xylene	1800	Not Detected
o-Xylene	1800	Not Detected
Acetone	7000	Not Detected

Container Type: 1 Liter Summa Canister

<u>Surrogates</u>	<u>% Recovery</u>	<u>Method Limits</u>
Octafluorotoluene	94	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	101	70-130

# AIR TOXICS LTD.

SAMPLE NAME: POLY AEN 007

ID#: 9509107A-04A

EPA METHOD TO-14 GC/MS Full Scan

File Name:

9091410

Date of Collection: 9/14/95

Dil. Factor:

3500

Date of Analysis: 9/14/95

Analyst's Initials:

BJM

Compound	Det. Limit (ppbv)	Amount (ppbv)
Vinyl Chloride	1800	2000
1,1-Dichloroethene	1800	Not Detected
Freon 113	1800	Not Detected
cis-1,2-Dichloroethene	1800	26000
Chloroform	1800	2900
1,1,1-Trichloroethane	1800	Not Detected
Benzene	1800	5200
Trichloroethene	1800	900000 E
Toluene	1800	Not Detected
Tetrachloroethene	1800	Not Detected
m,p-Xylene	1800	Not Detected
o-Xylene	1800	Not Detected
Acetone	7000	Not Detected

E = Exceeds instrument calibration range, but within linear range.

Container Type: 1 Liter Summa Canister

Surrogates	% Recovery	Method Limits
Octafluorotoluene	95	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	103	70-130

# AIR TOXICS LTD.

SAMPLE NAME: Method Spike

ID#: 9509107A-05A

EPA METHOD TO-14 GC/MS Full Scan

File Name:

9091402

Date of Collection: NA

Dil. Factor:

1.0

Date of Analysis: 9/14/95

Analyst's Initials:

MPG

Compound	Det. Limit (ppbv)	% Recovery
Vinyl Chloride	0.50	132 Q
1,1-Dichloroethene	0.50	110
Freon 113	0.50	108
cis-1,2-Dichloroethene	0.50	102
Chloroform	0.50	103
1,1,1-Trichloroethane	0.50	99
Benzene	0.50	112
Trichloroethene	0.50	99
Toluene	0.50	100
Tetrachloroethene	0.50	92
m,p-Xylene	0.50	92
o-Xylene	0.50	98
Acetone	2.0	91

Q = Exceeds Quality Control limits of 70% to 130%.

Container Type: NA

Surrogates	% Recovery	Method Limits
Octafluorotoluene	95	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	102	70-130

# AIR TOXICS LTD.

SAMPLE NAME: Lab Blank

ID#: 9509107A-06A

EPA METHOD TO-14 GC/MS Full Scan

File Name: 9091404 Date of Collection: NA  
Dil. Factor: 1.0 Date of Analysis: 9/14/95  
Analyst's Initials: MPG

Compound	Det. Limit (ppbv)	Amount (ppbv)
Vinyl Chloride	0.50	Not Detected
1,1-Dichloroethene	0.50	Not Detected
Freon 113	0.50	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected
Chloroform	0.50	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected
Benzene	0.50	Not Detected
Trichloroethene	0.50	Not Detected
Toluene	0.50	Not Detected
Tetrachloroethene	0.50	Not Detected
m,p-Xylene	0.50	Not Detected
o-Xylene	0.50	Not Detected
Acetone	2.0	Not Detected

Container Type: NA

Surrogates	% Recovery	Method Limits
Octafluorotoluene	94	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	100	70-130





# @ AIR TOXICS LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

## WORK ORDER #: 9509107B

### Work Order Summary

<b>CLIENT:</b>	Ms. Carol Kontonickas Radian Corporation 10389 Old Placerville Road Sacramento, CA 95827	<b>BILL TO:</b> Subcontracts Payable Radian Corporation P.O. Box 201088 Austin, TX 78720-1088
<b>PHONE:</b>	916-857-7448	<b>INVOICE #</b> 8034
<b>FAX:</b>	916-362-2318	<b>SUBCONTRACT #</b> S00256066
<b>DATE RECEIVED:</b>	9/14/95	<b>PROJECT #</b> 602-125-80-10 McClellan Polymer
<b>DATE COMPLETED:</b>	9/22/95	<b>AMOUNT\$:</b> \$200.00

<b>FRACTION #</b>	<b>NAME</b>	<b>TEST</b>	<b>RECEIPT</b>	
			<b>VAC./PRES.</b>	<b>PRICE</b>
01A	POLY AIN 004	Mod. Method 18	5.5 "Hg	\$50.00
02A	POLY AEN 005	Mod. Method 18	6.0 "Hg	\$50.00
03A	POLY AEX 006	Mod. Method 18	5.5 "Hg	\$50.00
04A	POLY AEN 007	Mod. Method 18	5.5 "Hg	\$50.00
05A	Method Spike	Mod. Method 18	NA	NC
06A	Lab Blank	Mod. Method 18	NA	NC

CERTIFIED BY *Janice L. Kumar*

Laboratory Director

DATE: 9/22/95

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA 95630  
(916) 985-1000 • (800) 985-5955 • FAX (916) 985-1020

# AIR TOXICS LTD.

## Vinyl Chloride by Modified EPA Method 18 Pre-Fractionator GC/PID

Field Sample I.D.	Lab Sample I.D.	File Name	Sample Date	Analyzed For	Dilution Factor	Det. Limit (ppbv)	Amount (ppbv)
POLY AIN 004	9509107B-01A	A0914015	9/13/95	Vinyl Chloride	5.0	250	2800
POLY AEN 005	9509107B-02A	A0914016	9/13/95	Vinyl Chloride	2.5	130	1200
POLY AEX 006	9509107B-03A	A0914017	9/13/95	Vinyl Chloride	2.5	130	1900
POLY AEN 007	9509107B-04A	A0914018	9/14/95	Vinyl Chloride	2.5	130	2600
Lab Blank	9509107B-06A	A0914014	NA	Vinyl Chloride	1.0	50	Not Detected
Spiked Sample						% Recovery	
Method Spike	9509107B-05A	A0914013	NA	Vinyl Chloride	1.0	50	101

Analysis Date: 9/14/95

Container Type: 1 Liter Summa Canister

Analyst's Initials: JS

Comments: NA = Not Applicable

# CHAIN OF CUSTODY RECORD

USE A BALLPOINT PEN AND PRESS FIRMLY  
THE INSTRUCTIONS FOR FILLING OUT  
THIS FORM ARE ON THE BACK

# RADIANT

C O R P O R A T I O N  
10389 ROCKINGHAM ROAD, SACRAMENTO, CA 95827  
(916) 362-5332

9509107B

1.010

TASK OR SUB TASK (one per form):  
PROJECT EVALUATION

CONTRACT NAME: MC CALLUM PROJECT

CHARGE NUMBER: 1002-125-3010

SAMPLE NUMBER		COLLECTION DATE	TIME	SAMPLES NUMBER	UNIT QUANTITY	PRESERVATIVE CODE	TYPE OF ANALYSIS	DISPOSAL DATE	DISPOSAL INITIALS
1A	AIR 004	12/01/95	12:00 CLK.	1	1L	V	/	10-14 4 PRE-FAC	
2A	AIR 005	12/01/95	12:00 CLK.	1	1L	V	/	10-14 SEC-141	
3A	POINT AEROCLOUD	12/01/95	12:00 CLK.	1	1L	V	/	10-14 SEC-NUL	
SAMPLE ANALYZED SAMPLES ISSUED TO									
1. SING 1 PER ANALYST									
1F VINYL CHLORIDE IS RELEASED									
IN 2-METHYL PROPANE									
RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME	RELINQUISHED BY	DATE	TIME	
White	11/14/95	/	White	11/14/95	/	White	11/14/95	8:20	
		:			:			:	
		:			:			:	
		:			:			:	
		:			:			:	
DISPOSAL CONFIRMED BY	DATE	TIME	CHAIN-OF-CUSTODY RETURNED BY	DATE	TIME				
		:			:			:	
		:			:			:	
		:			:			:	

WHITE - COORDINATOR / GOLDENROD - PROJECT DIRECTOR / PINK - SAMPLE CONTROL / YELLOW - INFORMATION / ALFRED - APPROVAL



# @ AIR TOXICS LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

## WORK ORDER #: 9509134A

### Work Order Summary

**CLIENT:** Ms. Carol Kontonickas  
Radian Corporation  
10389 Old Placerville Road  
Sacramento, CA 95827

**BILL TO:** Subcontracts Payable  
Radian Corporation  
P.O. Box 201088  
Austin, TX 78720-1088

**PHONE:** 916-857-7448  
**FAX:** 916-362-2318  
**DATE RECEIVED:** 9/15/95  
**DATE COMPLETED** 9/22/95

**INVOICE #** 8035  
**SUBCONTRACT #** S00256066  
**PROJECT #** 602-125-80-10 McClellan Polymer  
**AMOUNT\$:** \$205.00

<b>FRACTION #</b>	<b>NAME</b>	<b>TEST</b>	<b>RECEIPT</b>	<b>PRICE</b>
			<b>VAC./PRES.</b>	
01A	POLY AEN-008	TO-14	5.5 "Hg	\$205.00
02A	Method Spike	TO-14	NA	NC
03A	Lab Blank	TO-14	NA	NC

CERTIFIED BY: Jinda J. Truman  
Laboratory Director

DATE: 9/22/95

*9/22/95  
OK*

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA 95630  
(916) 985-1000 • (800) 985-5955 • FAX (916) 985-1020

# AIR TOXICS LTD.

SAMPLE NAME: POLY AEN-008

ID#: 9509134A-01A

EPA METHOD TO-14 GC/MS Full Scan

File Name:  
Dil. Factor:  
Analyst's Initials:

9091605  
3800  
BJM

Date of Collection: 9/15/95  
Date of Analysis: 9/16/95

Compound	Det. Limit (ppbv)	Amount (ppbv)
Vinyl Chloride	1900	Not Detected
1,1-Dichloroethene	1900	Not Detected
Freon 113	1900	Not Detected
cis-1,2-Dichloroethene	1900	18000
Chloroform	1900	1900
1,1,1-Trichloroethane	1900	Not Detected
Benzene	1900	4000
Trichloroethene	1900	670000
Toluene	1900	3200
Tetrachloroethene	1900	Not Detected
m,p-Xylene	1900	14000
o-Xylene	1900	5500
Acetone	7600	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	% Recovery	Method Limits
Octafluorotoluene	88	70-130
Toluene-d8	103	70-130
4-Bromofluorobenzene	102	70-130

# AIR TOXICS LTD.

SAMPLE NAME: Method Spike

ID#: 9509134A-02A

EPA METHOD TO-14 GC/MS Full Scan

File Name:	9091602	Date of Collection: NA
Dil. Factor:	1.0	Date of Analysis: 9/16/95
Analyst's Initials:	BJM	

Compound	Det. Limit (ppbv)	% Recovery
Vinyl Chloride	0.50	121
1,1-Dichloroethene	0.50	94
Freon 113	0.50	90
cis-1,2-Dichloroethene	0.50	98
Chloroform	0.50	98
1,1,1-Trichloroethane	0.50	94
Benzene	0.50	106
Trichloroethene	0.50	92
Toluene	0.50	96
Tetrachloroethene	0.50	90
m,p-Xylene	0.50	99
o-Xylene	0.50	95
Acetone	2.0	106

Container Type: NA

Surrogates	% Recovery	Method Limits
Octafluorotoluene	97	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	104	70-130

# AIR TOXICS LTD.

SAMPLE NAME: Lab Blank

ID#: 9509134A-03A

EPA METHOD TO-14 GC/MS Full Scan

File Name:

9091604

Date of Collection: NA

Dil. Factor:

1.0

Date of Analysis: 9/16/95

Analyst's Initials:

BJM

Compound	Det. Limit (ppbv)	Amount (ppbv)
Vinyl Chloride	0.50	Not Detected
1,1-Dichloroethene	0.50	Not Detected
Freon 113	0.50	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected
Chloroform	0.50	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected
Benzene	0.50	Not Detected
Trichloroethene	0.50	Not Detected
Toluene	0.50	Not Detected
Tetrachloroethene	0.50	Not Detected
m,p-Xylene	0.50	Not Detected
o-Xylene	0.50	Not Detected
Acetone	2.0	Not Detected

Container Type: NA

Surrogates	% Recovery	Method Limits
Octafluorotoluene	94	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	100	70-130



# @ AIR TOXICS LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

## WORK ORDER #: 9509134B

### Work Order Summary

<b>CLIENT:</b>	Ms. Carol Kontonickas Radian Corporation 10389 Old Placerville Road Sacramento, CA 95827	<b>BILL TO:</b> Subcontracts Payable Radian Corporation P.O. Box 201088 Austin, TX 78720-1088
<b>PHONE:</b>	916-857-7448	<b>INVOICE #</b> 8035
<b>FAX:</b>	916-362-2318	<b>SUBCONTRACT #</b> S00256066
<b>DATE RECEIVED:</b>	9/15/95	<b>PROJECT #</b> 602-125-80-10 McClellan Polymer
<b>DATE COMPLETED:</b>	9/22/95	<b>AMOUNT\$:</b> \$50.00

<b><u>FRACTION #</u></b>	<b><u>NAME</u></b>	<b><u>TEST</u></b>	<b><u>RECEIPT</u></b>	<b><u>VAC./PRES.</u></b>	<b><u>PRICE</u></b>
01A	POLY AEN-008	Mod. Method 18	9/20/95	5.5 "Hg	\$50.00
02A	Method Spike	Mod. Method 18	OK	NA	NC
03A	Lab Blank	Mod. Method 18	OK	NA	NC

9/20/95  
OK

CERTIFIED BY: *Jinda J. Fruman*  
Laboratory Director

DATE: 9/22/95

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA 95630  
(916) 985-1000 • (800) 985-5955 • FAX (916) 985-1020

# AIR TOXICS LTD.

## Vinyl Chloride by Modified EPA Method 18 Pre-Fractionator GC/PID

Field Sample I.D.	Lab Sample I.D.	File Name	Sample Date	Analyzed For	Dilution Factor	Det. Limit (ppbv)	Amount (ppbv)
POLY AEN-008	9509134B-01A	A0918B05	9/15/95	Vinyl Chloride	2.5	130	3200
Lab Blank	9509134B-03A	A0918B02	NA	Vinyl Chloride	1.0	50	Not Detected
<b>Spiked Sample</b>							% Recovery
Method Spike	9509134B-02A	A0918B01	NA	Vinyl Chloride	1.0	50	94

Analysis Date: 9/18/95

Container Type: 1 Liter Summa Canister

Analyst's Initials: JS

Comments: NA = Not Applicable



# @ AIR TOXICS LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

## WORK ORDER #: 9509168A Work Order Summary

**CLIENT:** Ms. Carol Kontonickas  
Radian Corporation  
10389 Old Placerville Road  
Sacramento, CA 95827

**BILL TO:** Subcontracts Payable  
Radian Corporation  
P.O. Box 201088  
Austin, TX 78720-1088

**PHONE:** 916-857-7448  
**FAX:** 916-362-2318  
**DATE RECEIVED:** 9/19/95  
**DATE COMPLETED:** 9/29/95

**INVOICE #** 8119  
**SUBCONTRACT #** S00256066  
**PROJECT #** 602-125-80-10 McClellan Polymer  
**AMOUNT\$:** \$820.00

<b>FRACTION #</b>	<b>NAME</b>	<b>TEST</b>	<b>RECEIPT</b>	<b>PRICE</b>
			<b>VAC./PRES.</b>	
01A	POLY AIN-090	TO-14	6.0 "Hg	\$205.00
02A	POLY AEN-010	TO-14	7.5 "Hg	\$205.00
03A	POLY AIN-011	TO-14	3.0 "Hg	\$205.00
04A	POLY AEN-012	TO-14	3.0 "Hg	\$205.00
05A	Method Spike	TO-14	NA	NC
06A	Lab Blank	TO-14	NA	NC
06B	Lab Blank	TO-14	NA	NC

CERTIFIED BY: *Jinda J. Farnas*  
Laboratory Director

DATE: 9/29/95

*10/11/95  
Yes good.*

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA 95630  
(916) 985-1000 • (800) 985-5955 • FAX (916) 985-1020

# AIR TOXICS LTD.

SAMPLE NAME: POLY AIN-090

ID#: 9509168A-01A

EPA METHOD TO-14 GC/MS Full Scan

File Name:

9091913

Date of Collection: 9/18/95

Dil. Factor:

3400

Date of Analysis: 9/19/95

Analyst's Initials:

EV

Compound	Det. Limit (ppbv)	Amount (ppbv)
Vinyl Chloride	1700	2600
1,1-Dichloroethene	1700	Not Detected
Freon 113	1700	Not Detected
cis-1,2-Dichloroethene	1700	21000
Chloroform	1700	2300
1,1,1-Trichloroethane	1700	Not Detected
Benzene	1700	3400
Trichloroethene	1700	760000 E
Toluene	1700	Not Detected
Tetrachloroethene	1700	Not Detected
m,p-Xylene	1700	8700
o-Xylene	1700	7500
Acetone	6800	11000

E = Exceeds instrument calibration range, but within linear range.

Container Type: 1 Liter Summa Canister

Surrogates	% Recovery	Method Limits
Octafluorotoluene	102	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	90	70-130

# AIR TOXICS LTD.

SAMPLE NAME: POLY AEN-010

ID#: 9509168A-02A

EPA METHOD TO-14 GC/MS Full Scan

File Name:	9091914	Date of Collection:	9/18/95
Dil. Factor:	5400	Date of Analysis:	9/19/95
Analyst's Initials:	FA		

Compound	Det. Limit (ppbv)	Amount (ppbv)
Vinyl Chloride	2700	Not Detected
1,1-Dichloroethene	2700	Not Detected
Freon 113	2700	Not Detected
cis-1,2-Dichloroethene	2700	19000
Chloroform	2700	Not Detected
1,1,1-Trichloroethane	2700	Not Detected
Benzene	2700	3500
Trichloroethene	2700	650000
Toluene	2700	Not Detected
Tetrachloroethene	2700	Not Detected
m,p-Xylene	2700	14000
o-Xylene	2700	14000
Acetone	11000	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	% Recovery	Method Limits
Octafluorotoluene	88	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	98	70-130

# AIR TOXICS LTD.

SAMPLE NAME: POLY AIN-011

ID#: 9509168A-03A

EPA METHOD TO-14 GC/MS Full Scan

File Name:

9091921

Date of Collection: 9/19/95

Dil. Factor:

4500

Date of Analysis: 9/20/95

Analyst's Initials:

FA

Compound	Det. Limit (ppbv)	Amount (ppbv)
Vinyl Chloride	2300	3100 <del>X</del>
1,1-Dichloroethene	2300	Not Detected
Freon 113	2300	Not Detected
cis-1,2-Dichloroethene	2300	20000
Chloroform	2300	2300
1,1,1-Trichloroethane	2300	Not Detected
Benzene	2300	3800
Trichloroethene	2300	660000
Toluene	2300	Not Detected
Tetrachloroethene	2300	Not Detected
m,p-Xylene	2300	9300
o-Xylene	2300	7200
Acetone	9000	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	% Recovery	Method Limits
Octafluorotoluene	94	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	100	70-130

# AIR TOXICS LTD.

SAMPLE NAME: POLY AEN-012

ID#: 9509168A-04A

EPA METHOD TO-14 GC/MS Full Scan

File Name:	9091922	Date of Collection:	9/19/95
Dil. Factor:	3000	Date of Analysis:	9/20/95
Analyst's Initials:	FA		

Compound	Det. Limit (ppbv)	Amount (ppbv)
Vinyl Chloride	1500	1900 <i>&gt;t</i>
1,1-Dichloroethene	1500	Not Detected
Freon 113	1500	Not Detected
cis-1,2-Dichloroethene	1500	22000
Chloroform	1500	2600
1,1,1-Trichloroethane	1500	Not Detected
Benzene	1500	3600
Trichloroethene	1500	730000 E <i>&gt;t</i>
Toluene	1500	Not Detected
Tetrachloroethene	1500	Not Detected
m,p-Xylene	1500	4000
o-Xylene	1500	4200
Acetone	6000	Not Detected

E = Exceeds instrument calibration range, but within linear range.

Container Type: 1 Liter Summa Canister

Surrogates	% Recovery	Method Limits
Octafluorotoluene	93	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	100	70-130

# AIR TOXICS LTD.

SAMPLE NAME: Method Spike

ID#: 9509168A-05A

EPA METHOD TO-14 GC/MS Full Scan

File Name:

9091902

Date of Collection: NA

Dil. Factor:

1.0

Date of Analysis: 9/19/95

Analyst's Initials:

BJM

Compound	Det. Limit (ppbv)	% Recovery
Vinyl Chloride	0.50	142 Q
1,1-Dichloroethene	0.50	110
Freon 113	0.50	100
cis-1,2-Dichloroethene	0.50	97
Chloroform	0.50	98
1,1,1-Trichloroethane	0.50	91
Benzene	0.50	109
Trichloroethene	0.50	94
Toluene	0.50	105
Tetrachloroethene	0.50	89
m,p-Xylene	0.50	95
o-Xylene	0.50	99
Acetone	2.0	92

Q = Exceeds Quality Control limits of 70% to 130%.

Container Type: NA

Surrogates	% Recovery	Method Limits
Octafluorotoluene	102	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	98	70-130

# AIR TOXICS LTD.

SAMPLE NAME: Lab Blank

ID#: 9509168A-06A

EPA METHOD TO-14 GC/MS Full Scan

File Name:	9091904	Date of Collection:	NA
Dil. Factor:	1.0	Date of Analysis:	9/19/95
Analyst's Initials:	LTS		

Compound	Det. Limit (ppbv)	Amount (ppbv)
Vinyl Chloride	0.50	Not Detected
1,1-Dichloroethene	0.50	Not Detected
Freon 113	0.50	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected
Chloroform	0.50	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected
Benzene	0.50	Not Detected
Trichloroethene	0.50	Not Detected
Toluene	0.50	Not Detected
Tetrachloroethene	0.50	Not Detected
m,p-Xylene	0.50	Not Detected
o-Xylene	0.50	Not Detected
Acetone	2.0	Not Detected

Container Type: NA

Surrogates	% Recovery	Method Limits
Octafluorotoluene	94	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	99	70-130

# AIR TOXICS LTD.

SAMPLE NAME: Lab Blank

ID#: 9509168A-06B

EPA METHOD TO-14 GC/MS Full Scan

File Name:

9091920

Date of Collection: NA

Dil. Factor:

1.0

Date of Analysis: 9/20/95

Analyst's Initials:

FA

Compound	Det. Limit (ppbv)	Amount (ppbv)
Vinyl Chloride	0.50	Not Detected
1,1-Dichloroethene	0.50	Not Detected
Freon 113	0.50	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected
Chloroform	0.50	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected
Benzene	0.50	Not Detected
Trichloroethene	0.50	Not Detected
Toluene	0.50	Not Detected
Tetrachloroethene	0.50	Not Detected
m,p-Xylene	0.50	Not Detected
o-Xylene	0.50	Not Detected
Acetone	2.0	Not Detected

Container Type: NA

## Surrogates

Octafluorotoluene

## % Recovery

95

## Method Limits

70-130

Toluene-d8

99

70-130

4-Bromofluorobenzene

89

70-130

**CHAIN OF CUSTODY RECORD**

RADIANT

USE A BALLPOINT PEN AND PRESS FIRMLY  
THE INSTRUCTIONS FOR FILLING OUT  
THIS FORM ARE ON THE BACK

10289 ROCKINGHAM ROAD, SACRAMENTO, CA 95827  
(916) 362-5222

9509168

1013

TASK OR SUB TASK (one per form):		LABORATORY NAME & ADDRESS:			
MICROBIAL	1	AIR TRIXICS LTD			
CONTRACT NAME: 10265		180 BLUE RAVINE SITE 13			
CHARGE NUMBER: C02-125-SG-10		TULSON, CA. 95630			
SAMPLE NUMBER	COLLECTION DATE	TIME	INITIALS NUMBER OF UNITS		
			UNIT QUANTITY		
			MATRIX		
			PRESERVATIVE		
			TYPE OF ANALYSIS		
POLYATEN- 10	11/11/95	1610	V	TU-14 + P	6.04 kg
POLYATEN- 14	11/11/95	1615	V	TU-14 + C	7.5" kg
				(P) - PRETRATION- ATOR	
				CNLY ANALYZE	
				IF VINYL CHLORIDE	
				IS NOT DETERED	
				USING TU-14	
RELEASED BY	DATE	TIME	COMMENTS:		
G. B. Blayman	11/11/95	13:22	1 : 1 : 1		
RECEIVED BY	DATE	TIME	RELINQUISHED BY		
G. B. Blayman	11/11/95	13:22	G. B. Blayman 9/19/95 #10		
DISPOSAL CONFIRMED BY	DATE	TIME	CHAIN OF CUSTODY RETURNED BY		
G. B. Blayman	9/19/95	14:10	1 : 1 : 1		

RECEIPT  
None

Temp. ~~Amber~~ 51°

Temp. ~~Amber~~ 50°

**CHAIN OF CUSTODY RECORD**

**USE A BALLPOINT PEN AND PRESS FIRMLY  
THE INSTRUCTIONS FOR FILLING OUT  
THIS FORM ARE ON THE BACK**

**RADIAN** CORPORATION

**101389 ROCKINGHAM ROAD, SACRAMENTO, CA 95827  
(916) 362-5332**

9509168  
-1014

This image is a high-contrast, black-and-white scan of a textured surface. It features a dense distribution of small, bright, irregular specks of varying sizes across a dark background. Interspersed among these smaller features are several larger, more prominent, and somewhat wavy or undulating structures that appear to be composed of the same basic grainy material. The overall effect is one of a noisy signal or a microscopic view of a granular or fibrous material.

# @ AIR TOXICS LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

## WORK ORDER #: 9509168B

### Work Order Summary

**CLIENT:** Ms. Carol Kontonickas  
Radian Corporation  
10389 Old Placerville Road  
Sacramento, CA 95827

**BILL TO:** Subcontracts Payable  
Radian Corporation  
P.O. Box 201088  
Austin, TX 78720-1088

**PHONE:** 916-857-7448      **INVOICE #** 8119  
**FAX:** 916-362-2318      **SUBCONTRACT #** S00256066  
**DATE RECEIVED:** 9/19/95      **PROJECT #** 602-125-80-10 McClellan Polymer  
**DATE COMPLETED:** 9/29/95      **AMOUNT\$:** \$50.00

<b>FRACTION #</b>	<b>NAME</b>	<b>TEST</b>	<b>RECEIPT</b>	<b>PRICE</b>
			<b>VAC./PRES.</b>	
01A	POLY AIN-090*	Mod. Method 18	6.0 "Hg	NC
02A	POLY AEN-010	Mod. Method 18	7.5 "Hg	\$50.00
03A	POLY AIN-011*	Mod. Method 18	3.0 "Hg	NC
04A	POLY AEN-012*	Mod. Method 18	3.0 "Hg	NC
05A	Method Spike	Mod. Method 18	NA	NC
06A	Lab Blank	Mod. Method 18	NA	NC

10/1/95  
S  
no qual

**LAB NARRATIVE:**

\*Sample on hold per client's request.

CERTIFIED BY: Ronald J. Freeman  
Laboratory Director

DATE: 9/29/95

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA 95630  
(916) 985-1000 • (800) 985-5955 • FAX (916) 985-1020

# AIR TOXICS LTD.

## Vinyl Chloride by Modified EPA Method 18 Pre-Fractionator GC/PID

Field Sample I.D.	Lab Sample I.D.	File Name	Sample Date	Analyzed For	Dilution Factor	Det. Limit (ppbv)	Amount (ppbv)
POLY AIN-090*	9509168B-01A	NA	9/18/95	Vinyl Chloride	1.0	50	Not Analyzed
POLY AEN-010	9509168B-02A	A092010	9/18/95	Vinyl Chloride	2.7	140	3000
POLY AIN-011*	9509168B-03A	NA	9/19/95	Vinyl Chloride	1.0	50	Not Analyzed
POLY AEN-012*	9509168B-04A	NA	9/19/95	Vinyl Chloride	1.0	50	Not Analyzed
Lab Blank	9509168B-06A	A092006	NA	Vinyl Chloride	1.0	50	Not Detected
Spiked Sample							% Recovery
Method Spike	9509168B-05A	A092005	NA	Vinyl Chloride	1.0	50	100

Analysis Date: 9/20/95  
Container Type: 1 Liter Summa Canister  
Analyst's Initials: JS & SPM

Comments: NA = Not Applicable  
\*Sample on hold per client's request.

# CHAIN OF CUSTODY RECORD

USE A BALLPOINT PEN AND PRESS FIRMLY  
THE INSTRUCTIONS FOR FILLING OUT  
THIS FORM ARE ON THE BACK

# RADIANT CORPORATION

10399 ROCKINGHAM ROAD, SACRAMENTO, CA 95827  
(916) 362-5332

1013

9509168V

## TASK OR SUB TASK (one per form):

A14-A15 147114 P-1

## CONTRACT NAME:

LA 802-S

## CHARGE NUMBER:

602-125-80-10

## LABORATORY NAME & ADDRESS:

AIK FIX/CD 171

147114 PAULINE 201117-05

FITSORT, CA 95631

SAMPLE NUMBER	COLLECTION DATE	TIME	NUMBER OF UNITS	SAMPLES INITIALS	MATRIX CODE	PRESERVATIVE	TYPE OF ANALYSIS	DISPOSAL DATE		DISPOSALERS INITIALS
								DATE	TIME	
01A	11/15/95	16:10	1	14	V		17-14-10(1)			
02A	11/15/95	16:15	1	14	V		10-14-10(1)			
							(P) = PREPARATION			
							AT 14			
							ONLY ANALYZE			
							IF V/N/VL CHARGE			
							IS NOT RETURNED			
							USING 10-14			
RELEASED BY	DATE	TIME	COMMENTS:							
147114 PAULINE	11/15/95	17:10								
RECEIVED BY	DATE	TIME	RELINQUISHED BY	DATE	TIME					
147114 PAULINE	11/15/95	13:22	147114 PAULINE	9/18/95	10:10					
DISPOSAL CONFIRMED BY	DATE	TIME	CHAIN-OF-CUSTODY RETURNED BY	DATE	TIME					

WHITE - COORDINATOR / GOLDENROD - PROJECT DIRECTOR / PINK - LABORATORY / BLUE - LABORATORY / YELLOW - SAMPLE CONTROL / GREEN - STAB / SIGHT / INSTRUCT? Y N None Temp. STAB / SIGHT / INSTRUCT? Y N None

# CHAIN OF CUSTODY RECORD

USE A BALLPOINT PEN AND PRESS FIRMLY  
THE INSTRUCTIONS FOR FILLING OUT  
THIS FORM ARE ON THE BACK

**RADIANT**  
CORPORATION  
10389 RUCKINGHAM ROAD, SACRAMENTO, CA 95827  
(916) 362-5332

9509168 -  
1014

## TASK OR SUB TASK (one per form):

WICAR 1 POLYMAK

CONTRACT NAME: DCE SCD'S

CHARGE NUMBER: 102-125-8616

## LABORATORY NAME & ADDRESS:

AIR. TOXICS LTL

(X) PULL RAVINE (R1, C11, R12)

ST. LOUISA, CA 94536

SAMPLE NUMBER	COLLECTION DATE	TIME	NUMBER OF SAMPLES	UNIT QUANTITY	MATRIX CODE	PRESERVATIVE	TYPE OF ANALYSIS	DISPOSAL DATE	DISPOSAL METHODS
03A-AIR-C11	07/17/95	915	6K	1	1L	V	TO-14 + (1)		
04A-AIR-C12	7/17/95	920	6K	1	1L	V	TO-14 + (1)		
							(1) = PRACTICAL/ANALYTICAL		
							ANALYTIC ONLY		
							IF VINYL CHORID		
							IS IND USING		
							TO-14		
RELEASED BY	DATE	TIME	TIME	COMMENTS:					
J. H. H.	7/17/95	11:11							
RECEIVED BY	DATE	TIME	TIME	RElinquised BY	DATE	TIME			
B. C. Johnson	7/19/95	13:22		B. C. Johnson	9/19/95	14:10			
B. C. Johnson	9/14/95	14:10			1/1	:			
	1/1	:			1/1	:			
	1/1	:			1/1	:			
	1/1	:			1/1	:			
DISPOSAL CONFIRMED BY	DATE	TIME	TIME	CHAIN-OF-CUSTODY RETURNED BY	DATE	TIME			
	1/1	:			1/1	:			

# @ AIR TOXICS LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

## WORK ORDER #: 9509180A Work Order Summary

<b>CLIENT:</b>	Ms. Carol Kontonickas Radian Corporation 10389 Old Placerville Road Sacramento, CA 95827	<b>BILL TO:</b> Subcontracts Payable Radian Corporation P.O. Box 201088 Austin, TX 78720-1088	
<b>PHONE:</b>	916-857-7448	<b>INVOICE #</b> 8120	
<b>FAX:</b>	916-362-2318	<b>P.O. #</b> S00256066	
<b>DATE RECEIVED:</b>	9/20/95	<b>PROJECT #</b> 602-125-80-10 McClellan Polymer	
<b>DATE COMPLETED:</b>	9/29/95	<b>AMOUNT\$:</b> \$410.00	
<b>FRACTION #</b>	<b>NAME</b>	<b>TEST</b>	<b>RECEIPT</b>
01A	Poly-AIN-013	TO-14	2.5 "Hg \$205.00
02A	Poly-AEN-014	TO-14	2.5 "Hg \$205.00
03A	Method Spike	TO-14	NA NC
04A	Lab Blank	TO-14	NA NC

10/12/95  
S. J.  
yes queued

CERTIFIED BY: Randa A. Truman  
Laboratory Director

DATE: 9/29/95

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA 95630  
(916) 985-1000 • (800) 985-5955 • FAX (916) 985-1020

# AIR TOXICS LTD.

SAMPLE NAME: Poly-AIN-013

ID#: 9509180A-01A

EPA METHOD TO-14 GC/MS Full Scan

File Name:

1092107

Date of Collection: 9/20/95

Dil. Factor:

4400

Date of Analysis: 9/21/95

Analyst's Initials:

EV

Compound	Det. Limit (ppbv)	Amount (ppbv)
Vinyl Chloride	2200	Not Detected
1,1-Dichloroethene	2200	Not Detected
Freon 113	2200	Not Detected
cis-1,2-Dichloroethene	2200	16000
Chloroform	2200	Not Detected
1,1,1-Trichloroethane	2200	Not Detected
Benzene	2200	2500
Trichloroethene	2200	520000
Toluene	2200	Not Detected
Tetrachloroethene	2200	Not Detected
m,p-Xylene	2200	6200
o-Xylene	2200	4000 <i>ST</i>
Acetone	8800	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	% Recovery	Method Limits
Octafluorotoluene	106	70-130
Toluene-d8	84	70-130
4-Bromofluorobenzene	100	70-130

# AIR TOXICS LTD.

SAMPLE NAME: Poly-AEN-014

ID#: 9509180A-02A

EPA METHOD TO-14 GC/MS Full Scan

File Name:	1092114	Date of Collection:	9/20/95
Dil. Factor:	4400	Date of Analysis:	9/22/95
Analyst's Initials:	SPM		

Compound	Det. Limit (ppbv)	Amount (ppbv)
Vinyl Chloride	2200	Not Detected
1,1-Dichloroethene	2200	Not Detected
Freon 113	2200	Not Detected
cis-1,2-Dichloroethene	2200	17000
Chloroform	2200	Not Detected
1,1,1-Trichloroethane	2200	Not Detected
Benzene	2200	2700
Trichloroethylene	2200	590000
Toluene	2200	Not Detected
Tetrachloroethylene	2200	Not Detected
m,p-Xylene	2200	4100
o-Xylene	2200	2300 <i>ST</i>
Acetone	8800	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	% Recovery	Method Limits
Octafluorotoluene	115	70-130
Toluene-d8	86	70-130
4-Bromofluorobenzene	103	70-130

# AIR TOXICS LTD.

SAMPLE NAME: Method Spike

ID#: 9509180A-03A

EPA METHOD TO-14 GC/MS Full Scan

File Name:

1092104

Date of Collection: NA

Dil. Factor:

1.0

Date of Analysis: 9/21/95

Analyst's Initials:

EV

Compound	Det. Limit (ppbv)	% Recovery
Vinyl Chloride	0.50	71
1,1-Dichloroethene	0.50	77
Freon 113	0.50	91
cis-1,2-Dichloroethene	0.50	77
Chloroform	0.50	87
1,1,1-Trichloroethane	0.50	76
Benzene	0.50	73
Trichloroethene	0.50	85
Toluene	0.50	73
Tetrachloroethene	0.50	95
m,p-Xylene	0.50	78
o-Xylene	0.50	61 Q
Acetone	2.0	134

Q = Exceeds Quality Control limits.

Container Type: NA

Surrogates	% Recovery	Method Limits
Octafluorotoluene	109	70-130
Toluene-d8	85	70-130
4-Bromofluorobenzene	97	70-130

# AIR TOXICS LTD.

SAMPLE NAME: Lab Blank

ID#: 9509180A-04A

EPA METHOD TO-14 GC/MS Full Scan

File Name:

1092106

Date of Collection: NA

Dil. Factor:

1.0

Date of Analysis: 9/21/95

Analyst's Initials:

EV

Compound	Det. Limit (ppbv)	Amount (ppbv)
Vinyl Chloride	0.50	Not Detected
1,1-Dichloroethene	0.50	Not Detected
Freon 113	0.50	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected
Chloroform	0.50	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected
Benzene	0.50	Not Detected
Trichloroethene	0.50	Not Detected
Toluene	0.50	Not Detected
Tetrachloroethene	0.50	Not Detected
m,p-Xylene	0.50	Not Detected
o-Xylene	0.50	Not Detected
Acetone	2.0	Not Detected

Container Type: NA

## Surrogates

Octafluorotoluene

% Recovery

**Method Limits**

70-130

Toluene-d8

114

70-130

4-Bromofluorobenzene

85

70-130

92

70-130

**CHAIN OF CUSTODY RECORD**

**USE A BALLPOINT PEN AND PRESS FIRMLY  
THE INSTRUCTIONS FOR FILLING OUT  
THIS FORM ARE ON THE BACK**

**RADIANT**  
CORPORATION

10395 OLD PLACERVILLE ROAD, SACRAMENTO, CA 95827  
(916) 362-5332

## **TASK OR SUB TASK (one per form):**

CONTRACT NAME: 100-0000000

CHARGE NUMBER:

**LABORATORY NAME & ADDRESS:**

TASK OR SUB TASK (one per form):		LABORATORY NAME & ADDRESS:								
CONTRACT NAME: 1100-PL-3611		1100-PL-3611 D								
CHARGE NUMBER:										
SAMPLE NUMBER	COLLECTOR	DATE	TIME	NUMBER OF SAMPLES	UNIT QUANTITY	MATRIX	TYPE OF ANALYSIS	PRESERVATIVE	DISPOSAL DATE	DISPOSAL METHODS
1100-PL-3611-3	John M. H.	11/16/93	10:00 AM	1	g			Refrigerate ANALYZE	2/5/95	1100-PL-3611 D
1100-PL-3611-4	John M. H.	11/16/93	10:00 AM	1	g			Refrigerate ANALYZE	2/5/95	1100-PL-3611 D
RELEASED BY	DATE	TIME	COMMENTS: # 1100-PL-3611-3 has been deleted in file A/N's				RELINQUISHED BY	DATE	TIME	
John M. H.	11/16/93	10:00					G. Chapman	9/20/93	14:25	
RECEIVED BY	DATE	TIME					DISPOSAL CONFIRMED BY	DATE	TIME	
John M. H.	11/16/93	10:00								

WHITE - COORDINATOR / GOLDENROD - PROJECT DIRECTOR / PINK - SAMPLE CONTROL / YELLOW - LABORATORY / BLUE - LABORATORY RECEIPT  
**Custody Seal intact? Y N** N **None** None **Temp.** None **Light** - Dark **Ex.** None **Condition** Good **Location** None

# @ AIR TOXICS LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

## WORK ORDER #: 9509180B

### Work Order Summary

CLIENT:	Ms. Carol Kontonickas Radian Corporation 10389 Old Placerville Road Sacramento, CA 95827	BILL TO: Subcontracts Payable Radian Corporation P.O. Box 201088 Austin, TX 78720-1088
PHONE:	916-857-7448	INVOICE # 8120
FAX:	916-362-2318	P.O. # S00256066
DATE RECEIVED:	9/20/95	PROJECT # 602-125-80-10 McClellan Polymer
DATE COMPLETED:	9/29/95	AMOUNT\$: No Charge

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT</u>	<u>VAC./PRES.</u>	<u>PRICE</u>
01A	Poly-AIN-013	Mod. Method 18	16/12/95	2.5 "Hg	NC
01B	Poly-AIN-013 Duplicate	Mod. Method 18	S	2.5 "Hg	NC
02A	Poly-AEN-014	Mod. Method 18	No quan	2.5 "Hg	NC
03A	Method Spike	Mod. Method 18		NA	NC
04A	Lab Blank	Mod. Method 18		NA	NC
04B	Lab Blank	Mod. Method 18		NA	NC

CERTIFIED BY: Jindal S. Fruma  
Laboratory Director

DATE: 9/29/95

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA 95630  
(916) 985-1000 • (800) 985-5955 • FAX (916) 985-1020

# AIR TOXICS LTD.

## Vinyl Chloride by Modified EPA Method 18 Pre-Fractionator GC/PID

Field Sample I.D.	Lab Sample I.D.	File Name	Sample Date	Analyzed For	Dilution Factor	Det. Limit (ppbv)	Amount (ppbv)	RPD
Poly-AIN-013	9509180B-01A	A092104	9/20/95	Vinyl Chloride	2.2	110	2200	0
Poly-AIN-013 Duplicate	9509180B-01B	A092105	9/20/95	Vinyl Chloride	2.2	110	2200	0
Poly-AEN-014	9509180B-02A	A092204	9/20/95	Vinyl Chloride	4.4	220	2600	NA
Lab Blank	9509180B-04A	A092103	NA	Vinyl Chloride	1.0	50	Not Detected	NA
Lab Blank	9509180B-04B	A092203	NA	Vinyl Chloride	1.0	50	Not Detected	NA
<b>Spiked Samples</b>								% Recovery
Method Spike	9509180B-03A	A092102	NA	Vinyl Chloride	1.0	50	92	NA

Analysis Date: 9/21/95 & 9/22/95  
Container Type: 1 Liter Summa Canister  
Analyst's Initials: SPM

Comments: NA = Not Applicable



# @ AIR TOXICS LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

## WORK ORDER #: 9509209A

### Work Order Summary

**CLIENT:** Ms. Carol Kontonickas  
Radian Corporation  
10389 Old Placerville Road  
Sacramento, CA 95827

**BILL TO:** Subcontracts Payable  
Radian Corporation  
P.O. Box 201088  
Austin, TX 78720-1088

**PHONE:** 916-857-7448  
**FAX:** 916-362-2318  
**DATE RECEIVED:** 9/22/95  
**DATE COMPLETED:** 9/29/95

**INVOICE #** 8122  
**SUBCONTRACT #** S00256066  
**PROJECT #** 602-125-80-10 McClellan Polymer  
**AMOUNT\$:** \$410.00

<b>FRACTION #</b>	<b>NAME</b>	<b>TEST</b>	<b>RECEIPT</b>	<b>VAC./PRES.</b>	<b>PRICE</b>
01A	POLY-BIN-016	TO-14	2.0 "Hg	\$205.00	
02A	POLY-BEN-017	TO-14	2.0 "Hg	\$205.00	
03A	Method Spike	TO-14	NA	NC	
04A	Lab Blank	TO-14	NA	NC	

10/12/95  
JG  
no qual

CERTIFIED BY: Jindal H. Freeman  
Laboratory Director

DATE: 9/29/95

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA 95630  
(916) 985-1000 • (800) 985-5955 • FAX (916) 985-1020

# AIR TOXICS LTD.

SAMPLE NAME: POLY-BIN-016

ID#: 9509209A-01A

EPA METHOD TO-14 GC/MS Full Scan

File Name:

9092521

Date of Collection: 9/22/95

Dil. Factor:

1400

Date of Analysis: 9/25/95

Analyst's Initials:

EV

Compound	Det. Limit (ppbv)	Amount (ppbv)
Vinyl Chloride	700	Not Detected
1,1-Dichloroethene	700	Not Detected
Freon 113	700	Not Detected
cis-1,2-Dichloroethene	700	12000
Chloroform	700	1000
1,1,1-Trichloroethane	700	Not Detected
Benzene	700	2000
Trichloroethene	700	390000 E ✓
Toluene	700	Not Detected
Tetrachloroethene	700	Not Detected
m,p-Xylene	700	3900
o-Xylene	700	3300
Acetone	2800	Not Detected

E = Exceeds instrument calibration range, but within linear range.

Container Type: 1 Liter Summa Canister

Surrogates	% Recovery	Method Limits
Octafluorotoluene	99	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	98	70-130

# AIR TOXICS LTD.

SAMPLE NAME: POLY-BEN-017

ID#: 9509209A-02A

EPA METHOD TO-14 GC/MS Full Scan

File Name: 9092523 Date of Collection: 9/22/95  
Dil. Factor: 8.6 Date of Analysis: 9/25/95  
Analyst's Initials: BJM

Compound	Det. Limit (ppbv)	Amount (ppbv)
Vinyl Chloride	4.3	640
1,1-Dichloroethene	4.3	19
Freon 113	4.3	51
cis-1,2-Dichloroethene	4.3	13
Chloroform	4.3	Not Detected
1,1,1-Trichloroethane	4.3	15
Benzene	4.3	Not Detected
Trichloroethene	4.3	560
Toluene	4.3	Not Detected
Tetrachloroethene	4.3	Not Detected
m,p-Xylene	4.3	4.4
o-Xylene	4.3	Not Detected
Acetone	17	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	% Recovery	Method Limits
Octafluorotoluene	98	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	99	70-130

# AIR TOXICS LTD.

SAMPLE NAME: Method Spike

ID#: 9509209A-03A

EPA METHOD TO-14 GC/MS Full Scan

File Name:

9092518

Date of Collection: NA

Dil. Factor:

1.0

Date of Analysis: 9/25/95

Analyst's Initials:

EV

Compound	Det. Limit (ppbv)	% Recovery
Vinyl Chloride	0.50	119
1,1-Dichloroethene	0.50	106
Freon 113	0.50	104
cis-1,2-Dichloroethene	0.50	101
Chloroform	0.50	100
1,1,1-Trichloroethane	0.50	100
Benzene	0.50	109
Trichloroethene	0.50	99
Toluene	0.50	100
Tetrachloroethene	0.50	94
m,p-Xylene	0.50	108
o-Xylene	0.50	109
Acetone	2.0	108

Container Type: NA

Surrogates

% Recovery

Method Limits

Octafluorotoluene

99

70-130

Toluene-d8

104

70-130

4-Bromofluorobenzene

100

70-130

# AIR TOXICS LTD.

SAMPLE NAME: Lab Blank

ID#: 9509209A-04A

EPA METHOD TO-14 GC/MS Full Scan

File Name:	9092520	Date of Collection:	NA
Dil. Factor:	1.0	Date of Analysis:	9/25/95
Analyst's Initials:	EV		

Compound	Det. Limit (ppbv)	Amount (ppbv)
Vinyl Chloride	0.50	Not Detected
1,1-Dichloroethene	0.50	Not Detected
Freon 113	0.50	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected
Chloroform	0.50	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected
Benzene	0.50	Not Detected
Trichloroethene	0.50	Not Detected
Toluene	0.50	Not Detected
Tetrachloroethene	0.50	Not Detected
m,p-Xylene	0.50	Not Detected
o-Xylene	0.50	Not Detected
Acetone	2.0	Not Detected

Container Type: NA

Surrogates	% Recovery	Method Limits
Octafluorotoluene	98	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	95	70-130



# @ AIR TOXICS LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

## WORK ORDER #: 9509209B

### Work Order Summary

<b>CLIENT:</b>	Ms. Carol Kontonickas Radian Corporation 10389 Old Placerville Road Sacramento, CA 95827	<b>BILL TO:</b> Subcontracts Payable Radian Corporation P.O. Box 201088 Austin, TX 78720-1088
<b>PHONE:</b>	916-857-7448	<b>INVOICE #</b> 8122
<b>FAX:</b>	916-362-2318	<b>SUBCONTRACT #</b> S00256066
<b>DATE RECEIVED:</b>	9/22/95	<b>PROJECT #</b> 602-125-80-10 McClellan Polymer
<b>DATE COMPLETED:</b>	9/29/95	<b>AMOUNT\$:</b> \$50.00

<b>FRACTION #</b>	<b>NAME</b>	<b>TEST</b>	<b>RECEIPT</b>	
			<b>VAC./PRES.</b>	<b>PRICE</b>
01A	POLY-BIN-016	Mod. Method 18	2.0 "Hg	\$50.00
02A	Method Spike	Mod. Method 18	NA	NC
03A	Lab Blank	Mod. Method 18	NA	NC

10/2/95  
No grant

CERTIFIED BY: *Christa J. Truman*  
Laboratory Director

DATE: 9/29/95

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA 95630  
(916) 985-1000 • (800) 985-5955 • FAX (916) 985-1020

# AIR TOXICS LTD.

## Vinyl Chloride by Modified EPA Method 18 Pre-Fractionator GC/PID

Field Sample I.D.	Lab Sample I.D.	File Name	Sample Date	Analyzed For	Dilution Factor	Det. Limit (ppbv)	Amount (ppbv)
POLY-BIN-016	9509209B-01A	A092604	9/22/95	Vinyl Chloride	2.2	110	1600
Lab Blank	9509209B-03A	A092603	NA	Vinyl Chloride	1.0	50	Not Detected
<b>Spiked Sample</b>							% Recovery
Method Spike	9509209B-02A	A092601	NA	Vinyl Chloride	1.0	50	103

Analysis Date: 9/26/95

Container Type: 1 Liter Summa Canister

Analyst's Initials: JS

Comments: NA = Not Applicable



# @ AIR TOXICS LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

## WORK ORDER #: 9509234A Work Order Summary

**CLIENT:** Ms. Carol Kontonickas  
Radian Corporation  
10389 Old Placerville Road  
Sacramento, CA 95827

**BILL TO:** Subcontracts Payable  
Radian Corporation  
P.O. Box 201088  
Austin, TX 78720-1088

**PHONE:** 916-857-7448  
**FAX:** 916-362-2318  
**DATE RECEIVED:** 9/25/95  
**DATE COMPLETED:** 9/29/95

**INVOICE #** 8124  
**SUBCONTRACT #** S00256066  
**PROJECT #** 602-125-80-10 McClellan Polymer  
**AMOUNT\$:** \$410.00

<b><u>FRACTION #</u></b>	<b><u>NAME</u></b>	<b><u>TEST</u></b>	<b><u>RECEIPT</u></b>	<b><u>VAC./PRES.</u></b>	<b><u>PRICE</u></b>
01A	POLY-BIN-018	TO-14	1.5 "Hg	\$205.00	
02A	POLY-BEN-019	TO-14	1.5 "Hg	\$205.00	
03A	Method Spike	TO-14	NA	NC	
04A	Lab Blank	TO-14	NA	NC	

10/12/95  
S  
S  
Yes good.

CERTIFIED BY: Jinola J. Truman  
Laboratory Director

DATE: 9/29/95

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA 95630  
(916) 985-1000 • (800) 985-5955 • FAX (916) 985-1020

# AIR TOXICS LTD.

SAMPLE NAME: POLY-BIN-018

ID#: 9509234A-01A

EPA METHOD TO-14 GC/MS Full Scan

File Name: 9092622 Date of Collection: 9/25/95  
Dil. Factor: 2100 Date of Analysis: 9/26/95  
Analyst's Initials: EV

Compound	Det. Limit (ppbv)	Amount (ppbv)
Vinyl Chloride	1100	1200
1,1-Dichloroethene	1100	Not Detected
Freon 113	1100	Not Detected
cis-1,2-Dichloroethene	1100	11000
Chloroform	1100	Not Detected
1,1,1-Trichloroethane	1100	Not Detected
Benzene	1100	1500
Trichloroethene	1100	380000 E <del>X</del>
Toluene	1100	Not Detected
Tetrachloroethene	1100	Not Detected
m,p-Xylene	1100	4000
o-Xylene	1100	3200
Acetone	4200	Not Detected

E = Exceeds instrument calibration range, but within linear range.

Container Type: 1 Liter Summa Canister

Surrogates	% Recovery	Method Limits
Octafluorotoluene	98	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	101	70-130

# AIR TOXICS LTD.

SAMPLE NAME: POLY-BEN-019

ID#: 9509234A-02A

EPA METHOD TO-14 GC/MS Full Scan

File Name:	9092623	Date of Collection:	9/25/95
Dil. Factor:	1400	Date of Analysis:	9/26/95
Analyst's Initials:	LTS		

Compound	Det. Limit (ppbv)	Amount (ppbv)
Vinyl Chloride	700	1400
1,1-Dichloroethene	700	Not Detected
Freon 113	700	Not Detected
cis-1,2-Dichloroethene	700	10000
Chloroform	700	750
1,1,1-Trichloroethane	700	Not Detected
Benzene	700	Not Detected
Trichloroethene	700	150000
Toluene	700	Not Detected
Tetrachloroethene	700	Not Detected
m,p-Xylene	700	Not Detected
o-Xylene	700	Not Detected
Acetone	2800	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	% Recovery	Method Limits
Octafluorotoluene	98	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	100	70-130

# AIR TOXICS LTD.

SAMPLE NAME: Method Spike

ID#: 9509234A-03A

EPA METHOD TO-14 GC/MS Full Scan

File Name:	9092619	Date of Collection:	NA
Dil. Factor:	1.0	Date of Analysis:	9/26/95
Analyst's Initials:	EV		

Compound	Det. Limit (ppbv)	% Recovery
Vinyl Chloride	0.50	129
1,1-Dichloroethene	0.50	104
Freon 113	0.50	102
cis-1,2-Dichloroethene	0.50	96
Chloroform	0.50	94
1,1,1-Trichloroethane	0.50	91
Benzene	0.50	106
Trichloroethene	0.50	91
Toluene	0.50	93
Tetrachloroethene	0.50	88
m,p-Xylene	0.50	106
o-Xylene	0.50	98
Acetone	2.0	100

Container Type: NA

<u>Surrogates</u>	<u>% Recovery</u>	<u>Method Limits</u>
Octafluorotoluene	98	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	99	70-130

# AIR TOXICS LTD.

SAMPLE NAME: Lab Blank

ID#: 9509234A-04A

EPA METHOD TO-14 GC/MS Full Scan

File Name:

9092621

Date of Collection: NA

Dil. Factor:

1.0

Date of Analysis: 9/26/95

Analyst's Initials:

EV

Compound	Det. Limit (ppbv)	Amount (ppbv)
Vinyl Chloride	0.50	Not Detected
1,1-Dichloroethene	0.50	Not Detected
Freon 113	0.50	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected
Chloroform	0.50	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected
Benzene	0.50	Not Detected
Trichloroethene	0.50	Not Detected
Toluene	0.50	Not Detected
Tetrachloroethene	0.50	Not Detected
m,p-Xylene	0.50	Not Detected
o-Xylene	0.50	Not Detected
Acetone	2.0	Not Detected

Container Type: NA

## Surrogates

Octafluorotoluene  
Toluene-d8  
4-Bromofluorobenzene

## % Recovery

98  
101  
99

## Method Limits

70-130  
70-130  
70-130

**CHAIN OF CUSTODY RECORD**

**USE A BALLPOINT PEN AND PRESS FIRMLY  
THE INSTRUCTIONS FOR FILLING OUT  
THIS FORM ARE ON THE BACK**

**RADIAN**  
CORPORATION

10395 OLD PLACERVILLE ROAD, SACRAMENTO, CA 95827  
(916) 362-5332

## TASK OR SUB TASK (one per row)

LABORATORY NAME & ADDRESS:

CONTRACT NAME: C.

卷之三

CHARGE NUMBER:

卷之三

WHITE - COORDINATOR / GOLDENROD - PROJECT DIRECTOR / PINK - SAMPLE CONTROL / YELLOW - LABORATORY / BLUE - LABORATORY RECEIPT

Condition when received - good

Custody Seal intact?

Teitid

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9509234

# @ AIR TOXICS LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

## WORK ORDER #: 9509272A Work Order Summary

**CLIENT:** Ms. Carol Kontonickas  
Radian Corporation  
10389 Old Placerville Road  
Sacramento, CA 95827

**BILL TO:** Subcontracts Payable  
Radian Corporation  
P.O. Box 201088  
Austin, TX 78720-1088

**PHONE:** 916-857-7448  
**FAX:** 916-362-2318  
**DATE RECEIVED:** 9/27/95  
**DATE COMPLETED:** 10/6/95

**INVOICE #** 8188  
**SUBCONTRACT #** S00256066  
**PROJECT #** 602-125-80-10 McClellan Polymer  
**AMOUNT\$:** \$410.00

<b>FRACTION #</b>	<b>NAME</b>	<b>TEST</b>	<b>RECEIPT</b>	<b>PRICE</b>
			<u>VAC./PRES.</u>	
01A	POLY-BIN-020	TO-14	2.0 "Hg	\$205.00
02A	POLY-BEN-021	TO-14	2.5 "Hg	\$205.00
03A	Method Spike	TO-14	NA	NC
04A	Lab Blank	TO-14	NA	NC

10/12/95  
yes good

CERTIFIED BY: Sandra J. Farnan  
Laboratory Director

DATE: 10/6/95

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA 95630  
(916) 985-1000 • (800) 985-5955 • FAX (916) 985-1020

# AIR TOXICS LTD.

SAMPLE NAME: POLY-BIN-020

ID#: 9509272A-01A

EPA METHOD TO-14 GC/MS Full Scan

File Name:	9092724	Date of Collection:	9/27/95
Dil. Factor:	1400	Date of Analysis:	9/28/95
Analyst's Initials:	LTS		

Compound	Det. Limit (ppbv)	Amount (ppbv)
Vinyl Chloride	700	980
1,1-Dichloroethene	700	Not Detected
Freon 113	700	Not Detected
cis-1,2-Dichloroethene	700	7000
Chloroform	700	Not Detected
1,1,1-Trichloroethane	700	Not Detected
Benzene	700	980
Trichloroethene	700	220000
Toluene	700	750
Tetrachloroethene	700	Not Detected
m,p-Xylene	700	2000
o-Xylene	700	1600
Acetone	2800	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	% Recovery	Method Limits
Octafluorotoluene	97	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	97	70-130

# AIR TOXICS LTD.

SAMPLE NAME: POLY-BEN-021

ID#: 9509272A-02A

EPA METHOD TO-14 GC/MS Full Scan

File Name:

9092725

Date of Collection: 9/27/95

Dil. Factor:

2800

Date of Analysis: 9/28/95

Analyst's Initials:

LTS

Compound	Det. Limit (ppbv)	Amount (ppbv)
Vinyl Chloride	1400	Not Detected
1,1-Dichloroethene	1400	Not Detected
Freon 113	1400	Not Detected
cis-1,2-Dichloroethene	1400	15000
Chloroform	1400	1500
1,1,1-Trichloroethane	1400	Not Detected
Benzene	1400	1900
Trichloroethene	1400	500000 E ↗ +
Toluene	1400	Not Detected
Tetrachloroethene	1400	Not Detected
m,p-Xylene	1400	Not Detected
o-Xylene	1400	Not Detected
Acetone	5600	Not Detected

E = Exceeds instrument calibration range, but within linear range.

Container Type: 1 Liter Summa Canister

## Surrogates

Octafluorotoluene

% Recovery

97

Method Limits

70-130

Toluene-d8

100

70-130

4-Bromofluorobenzene

96

70-130

# AIR TOXICS LTD.

SAMPLE NAME: Method Spike

ID#: 9509272A-03A

EPA METHOD TO-14 GC/MS Full Scan

File Name:

9092718

Date of Collection: NA

Dil. Factor:

1.0

Date of Analysis: 9/27/95

Analyst's Initials:

BJM

Compound	Det. Limit (ppbv)	% Recovery
Vinyl Chloride	0.50	135 Q ✓
1,1-Dichloroethene	0.50	102
Freon 113	0.50	103
cis-1,2-Dichloroethene	0.50	96
Chloroform	0.50	92
1,1,1-Trichloroethane	0.50	91
Benzene	0.50	105
Trichloroethene	0.50	89
Toluene	0.50	92
Tetrachloroethene	0.50	82
m,p-Xylene	0.50	92
o-Xylene	0.50	88
Acetone	2.0	102

Q = Exceeds Quality Control limits of 70% to 130%.

Container Type: NA

Surrogates	% Recovery	Method Limits
Octafluorotoluene	97	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	102	70-130

# AIR TOXICS LTD.

SAMPLE NAME: Lab Blank

ID#: 9509272A-04A

EPA METHOD TO-14 GC/MS Full Scan

File Name:

9092721

Date of Collection: NA

Dil. Factor:

1.0

Date of Analysis: 9/27/95

Analyst's Initials:

Compound	Det. Limit (ppbv)	Amount (ppbv)
Vinyl Chloride	0.50	Not Detected
1,1-Dichloroethene	0.50	Not Detected
Freon 113	0.50	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected
Chloroform	0.50	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected
Benzene	0.50	Not Detected
Trichloroethene	0.50	Not Detected
Toluene	0.50	Not Detected
Tetrachloroethene	0.50	Not Detected
m,p-Xylene	0.50	Not Detected
o-Xylene	0.50	Not Detected
Acetone	2.0	Not Detected

Container Type: NA

## Surrogates

## % Recovery

## Method Limits

Octafluorotoluene	95	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	99	70-130



# @ AIR TOXICS LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

## WORK ORDER #: 9509272B

### Work Order Summary

<b>CLIENT:</b>	Ms. Carol Kontonickas Radian Corporation 10389 Old Placerville Road Sacramento, CA 95827	<b>BILL TO:</b> Subcontracts Payable Radian Corporation P.O. Box 201088 Austin, TX 78720-1088
<b>PHONE:</b>	916-857-7448	<b>INVOICE #</b> 8188
<b>FAX:</b>	916-362-2318	<b>SUBCONTRACT #</b> S00256066
<b>DATE RECEIVED:</b>	9/27/95	<b>PROJECT #</b> 602-125-80-10 McClellan Polymer
<b>DATE COMPLETED:</b>	10/6/95	<b>AMOUNT\$:</b> \$50.00

<b>FRACTION #</b>	<b>NAME</b>	<b>TEST</b>	<b>RECEIPT</b>	
			<b>VAC./PRES.</b>	<b>PRICE</b>
01A	POLY-BIN-020*	Mod. Method 18	2.0 "Hg	NC
02A	POLY-BEN-021	Mod. Method 18	2.5 "Hg	\$50.00
03A	Method Spike	Mod. Method 18	NA	NC
04A	Lab Blank	Mod. Method 18	NA	NC

10/2/95  
S  
No qual

**LAB NARRATIVE:**

\*Sample on hold per client's request.

CERTIFIED BY: Sinclair J. Turner  
Laboratory Director

DATE: 10/6/95

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA 95630  
(916) 985-1000 • (800) 985-5955 • FAX (916) 985-1020

# AIR TOXICS LTD.

## Vinyl Chloride by Modified EPA Method 18 Pre-Fractionator GC/PID

Field Sample I.D.	Lab Sample I.D.	File Name	Sample Date	Analyzed For	Dilution Factor	Det. Limit (ppbv)	Amount (ppbv)
POLY-BIN-020*	9509272B-01A	NA	9/27/95	Vinyl Chloride	1.0	50	Not Analyzed
POLY-BEN-021	9509272B-02A	A092818	9/27/95	Vinyl Chloride	2.2	110	1200
Lab Blank	9509272B-04A	A092812	NA	Vinyl Chloride	1.0	50	Not Detected
Spiked Sample					% Recovery		
Method Spike	9509272B-03A	A092810	NA	Vinyl Chloride	1.0	50	72

Analysis Date: 9/28/95

Container Type: 1 Liter Summa Canister

Analyst's Initials: JS

Comments: NA = Not Applicable

\*Sample on hold per client's request.

**CHAIN OF CUSTODY RECORD**

**USE A BALLPOINT PEN AND PRESS FIRMLY  
THE INSTRUCTIONS FOR FILLING OUT  
THIS FORM ARE ON THE BACK**

**RADIAN**  
CORPORATION

10395 OLD PLACERVILLE ROAD, SACRAMENTO, CA 95827  
(916) 362-5332

9509272

5851

TASK OR SUB TASK (one per form):		LABORATORY NAME & ADDRESS:					
b. C1f B Polymers TS		AIR TOXICS LT D					
CONTRACT NAME: D6CO1S		160 Blueافية، سوهاج					
CHARGE NUMBER: 602-125-80-10		10 cm, CA 95630					
SAMPLE NUMBER	COLLECTION DATE	TIME	NUMBER OF UNITS	INTACTS	DISPOSAL DATE	DISPOSAL SELLERS	INTACTS
6014-P1N-010	4/13/95	10:00 AM	1	1 Liter	10-14-1 (P)		
Polycrystalline	4/21/95	10:00 AM	1	1 Liter	10-14-1 (P)		
					(P) Polarizers		
					Cry. analyze		
					With (P) 14		
					Vinyl chloride		
					is ND using		
					10-14		
RELEASED BY	DATE	TIME	COMMENTS:				
<i>John G. Clark</i>	10/19/95	10:00					
RECEIVED BY	DATE	TIME	RELINQUISHED BY				
<i>John G. Clark</i>	10/19/95	10:00	<i>John G. Clark</i>				
DISPOSAL CONFIRMED BY	DATE	TIME	CHAIN-OF-CUSTODY RETURNED BY				
<i>John G. Clark</i>	9/27/95	13:40					

# @ AIR TOXICS LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

## WORK ORDER #: 9509314A

### Work Order Summary

**CLIENT:** Ms. Carol Kontonickas  
Radian Corporation  
10389 Old Placerville Road  
Sacramento, CA 95827

**BILL TO:** Subcontracts Payable  
Radian Corporation  
P.O. Box 201088  
Austin, TX 78720-1088

**PHONE:** 916-857-7448  
**FAX:** 916-362-2318  
**DATE RECEIVED:** 9/29/95  
**DATE COMPLETED:** 10/6/95

**INVOICE #** 8190  
**SUBCONTRACT #** S00256066  
**PROJECT #** 602-125-80-10 McClellan Polymer  
**AMOUNT\$:** \$615.00

<b>FRACTION #</b>	<b>NAME</b>	<b>TEST</b>	<b>RECEIPT</b>	
			<b>VAC./PRES.</b>	<b>PRICE</b>
01A	Poly-BIN-022*	TO-14	1.5 "Hg	NC
02A	Poly-BEN-023*	TO-14	1.0 "Hg	NC
03A	Poly-CIN-024	TO-14	2.0 "Hg	\$205.00
03B	Poly-CIN-024 Duplicate	TO-14	2.0 "Hg	\$205.00
04A	Poly-CEN-025	TO-14	2.0 "Hg	\$205.00
05A	Method Spike	TO-14	NA	NC
06A	Lab Blank	TO-14	NA	NC

10/12/95  
Jesquel

#### LAB NARRATIVE:

\*Sample on hold per client's request.

CERTIFIED BY: Linda J. Frana  
Laboratory Director

DATE: 10/6/95

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA 95630  
(916) 985-1000 • (800) 985-5955 • FAX (916) 985-1020

# AIR TOXICS LTD.

SAMPLE NAME: Poly-BIN-022\*

ID#: 9509314A-01A

EPA METHOD TO-14 GC/MS Full Scan

File Name:	NA	Date of Collection: 9/29/95
Dil. Factor:	1.0	Date of Analysis: NA
Analyst's Initials:	NA	

Compound	Det. Limit (ppbv)	Amount (ppbv)
Vinyl Chloride	0.50	Not Analyzed
1,1-Dichloroethene	0.50	Not Analyzed
Freon 113	0.50	Not Analyzed
cis-1,2-Dichloroethene	0.50	Not Analyzed
Chloroform	0.50	Not Analyzed
1,1,1-Trichloroethane	0.50	Not Analyzed
Benzene	0.50	Not Analyzed
Trichloroethene	0.50	Not Analyzed
Toluene	0.50	Not Analyzed
Tetrachloroethene	0.50	Not Analyzed
m,p-Xylene	0.50	Not Analyzed
o-Xylene	0.50	Not Analyzed
Acetone	2.0	Not Analyzed

\*Sample on hold per client's request.

Container Type: 1 Liter Summa Canister

Surrogates	% Recovery	Method Limits
Octafluorotoluene	NA	70-130
Toluene-d8	NA	70-130
4-Bromofluorobenzene	NA	70-130

# AIR TOXICS LTD.

SAMPLE NAME: Poly-BEN-023\*

ID#: 9509314A-02A

EPA METHOD TO-14 GC/MS Full Scan

File Name:	NA	Date of Collection: 9/29/95
Dil. Factor:	1.0	Date of Analysis: NA
Analyst's Initials:	NA	

Compound	Det. Limit (ppbv)	Amount (ppbv)
Vinyl Chloride	0.50	Not Analyzed
1,1-Dichloroethene	0.50	Not Analyzed
Freon 113	0.50	Not Analyzed
cis-1,2-Dichloroethene	0.50	Not Analyzed
Chloroform	0.50	Not Analyzed
1,1,1-Trichloroethane	0.50	Not Analyzed
Benzene	0.50	Not Analyzed
Trichloroethene	0.50	Not Analyzed
Toluene	0.50	Not Analyzed
Tetrachloroethene	0.50	Not Analyzed
m,p-Xylene	0.50	Not Analyzed
o-Xylene	0.50	Not Analyzed
Acetone	2.0	Not Analyzed

\*Sample on hold per client's request.

Container Type: 1 Liter Summa Canister

Surrogates	% Recovery	Method Limits
Octafluorotoluene	NA	70-130
Toluene-d8	NA	70-130
4-Bromofluorobenzene	NA	70-130

# AIR TOXICS LTD.

SAMPLE NAME: Poly-CIN-024

ID#: 9509314A-03A

EPA METHOD TO-14 GC/MS Full Scan

**File Name:** 5100211      **Date of Collection:** 9/29/95  
**Dil. Factor:** 2200      **Date of Analysis:** 10/2/95  
**Analyst's Initials:** MH

Compound	Det. Limit (ppbv)	Amount (ppbv)
Vinyl Chloride	1100	2200
1,1-Dichloroethene	1100	Not Detected
Freon 113	1100	Not Detected
cis-1,2-Dichloroethene	1100	23000
Chloroform	1100	2200
1,1,1-Trichloroethane	1100	Not Detected
Benzene	1100	2800
Trichloroethene	1100	640000 E
Toluene	1100	1600
Tetrachloroethene	1100	Not Detected
m,p-Xylene	1100	7200
o-Xylene	1100	6300
Acetone	4400	Not Detected

**E** = Exceeds instrument calibration range, but within linear range.

Container Type: 1 Liter Summa Canister

Surrogates	% Recovery	Method Limits
Octafluorotoluene	104	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	90	70-130

# AIR TOXICS LTD.

SAMPLE NAME: Poly-CIN-024 Duplicate

ID#: 9509314A-03B

EPA METHOD TO-14 GC/MS Full Scan

File Name:	5100213	Date of Collection:	9/29/95
Dil. Factor:	2200	Date of Analysis:	10/2/95
Analyst's Initials:	LTS		

Compound	Det. Limit (ppbv)	Amount (ppbv)	RPD
Vinyl Chloride	1100	2000	9.5
1,1-Dichloroethene	1100	Not Detected	NA
Freon 113	1100	Not Detected	NA
cis-1,2-Dichloroethene	1100	22000	4.4
Chloroform	1100	2100	4.7
1,1,1-Trichloroethane	1100	Not Detected	NA
Benzene	1100	2400	15
Trichloroethene	1100	600000 E	6.5
Toluene	1100	1500	6.5
Tetrachloroethene	1100	Not Detected	NA
m,p-Xylene	1100	7300	1.4
o-Xylene	1100	6300	0
Acetone	4400	Not Detected	NA

E = Exceeds instrument calibration range, but within linear range.

Container Type: 1 Liter Summa Canister

<u>Surrogates</u>	<u>% Recovery</u>	<u>Method Limits</u>
Octafluorotoluene	107	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	92	70-130

# AIR TOXICS LTD.

SAMPLE NAME: Poly-CEN-025

ID#: 9509314A-04A

EPA METHOD TO-14 GC/MS Full Scan

**File Name:** 5100212      **Date of Collection:** 9/29/95  
**Dil. Factor:** 2800      **Date of Analysis:** 10/2/95  
**Analyst's Initials:** MH

Compound	Det. Limit (ppbv)	Amount (ppbv)
Vinyl Chloride	1400	2500
1,1-Dichloroethene	1400	Not Detected
Freon 113	1400	Not Detected
cis-1,2-Dichloroethene	1400	26000
Chloroform	1400	2500
1,1,1-Trichloroethane	1400	Not Detected
Benzene	1400	3500
Trichloroethene	1400	690000 E 
Toluene	1400	Not Detected
Tetrachloroethene	1400	Not Detected
m,p-Xylene	1400	Not Detected
o-Xylene	1400	Not Detected
Acetone	5600	Not Detected

**E** = Exceeds instrument calibration range, but within linear range.

Container Type: 1 Liter Summa Canister

Surrogates	% Recovery	Method Limits
Octafluorotoluene	104	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	89	70-130

# AIR TOXICS LTD.

SAMPLE NAME: Method Spike

ID#: 9509314A-05A

EPA METHOD TO-14 GC/MS Full Scan

File Name:	5100202	Date of Collection:	NA
Dil. Factor:	1.0	Date of Analysis:	10/2/95
Analyst's Initials:	MH		

Compound	Det. Limit (ppbv)	% Recovery
Vinyl Chloride	0.50	97
1,1-Dichloroethene	0.50	103
Freon 113	0.50	98
cis-1,2-Dichloroethene	0.50	95
Chloroform	0.50	100
1,1,1-Trichloroethane	0.50	102
Benzene	0.50	92
Trichloroethene	0.50	87
Toluene	0.50	84
Tetrachloroethene	0.50	81
m,p-Xylene	0.50	90
o-Xylene	0.50	85
Acetone	2.0	103

Container Type: NA

Surrogates	% Recovery	Method Limits
Octafluorotoluene	103	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	109	70-130

# AIR TOXICS LTD.

SAMPLE NAME: Lab Blank

ID#: 9509314A-06A

EPA METHOD TO-14 GC/MS Full Scan

File Name:

5100206

Date of Collection: NA

Dil. Factor:

1.0

Date of Analysis: 10/2/95

Analyst's Initials:

MH

Compound	Det. Limit (ppbv)	Amount (ppbv)
Vinyl Chloride	0.50	Not Detected
1,1-Dichloroethene	0.50	Not Detected
Freon 113	0.50	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected
Chloroform	0.50	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected
Benzene	0.50	Not Detected
Trichloroethene	0.50	Not Detected
Toluene	0.50	Not Detected
Tetrachloroethene	0.50	Not Detected
m,p-Xylene	0.50	Not Detected
o-Xylene	0.50	Not Detected
Acetone	2.0	Not Detected

Container Type: NA

#### Surrogates

Octafluorotoluene

% Recovery

105

Method Limits

70-130

Toluene-d8

96

70-130

4-Bromofluorobenzene

73

70-130

# CHAIN OF CUSTODY RECORD

USE A BALLPOINT PEN AND PRESS FIRMLY  
THE INSTRUCTIONS FOR FILLING OUT  
THIS FORM ARE ON THE BACK

# RADIAN CORPORATION

10395 OLD PLACERVILLE ROAD, SACRAMENTO, CA 95827  
(916) 362-5332

95093141

4999

TASK OR SUB TASK (one per form):  
PC Master Test Facility Sample

LABORATORY NAME & ADDRESS:  
AIR TECXICS LTD

CONTRACT NAME: PC Master

CHARGE NUMBER: 663-125-SC-10

160 BLUE RAVINEDO, S.F.B.

COLLECTION DATE TIME

SAMPLE NUMBER

NUMBER OF UNITS

INITIALS

COLLECTION

MATRIX

UNIT QUANTITY

PRESERVATIVE

TYPE OF ANALYSIS

DISPOSALERS INITIALS

DISPOSAL DATE

DISPOSALERS INITIALS

WHITE - COORDINATOR / GOLDENROD - PROJECT DIRECTOR / PINK - SAMPLE CONTROL / YELLOW - LABORATORY / BLUE - LABORATORY RECEIPT

Good

# @ AIR TOXICS LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

## WORK ORDER #: 9510006A

### Work Order Summary

**CLIENT:** Ms. Carol Kontonickas  
Radian Corporation  
10389 Old Placerville Road  
Sacramento, CA 95827

**BILL TO:** Subcontracts Payable  
Radian Corporation  
P.O. Box 201088  
Austin, TX 78720-1088

**PHONE:** 916-857-7448  
**FAX:** 916-362-2318  
**DATE RECEIVED:** 10/2/95  
**DATE COMPLETED:** 10/6/95

**INVOICE #** 8191  
**SUBCONTRACT #** S00256066  
**PROJECT #** 602-125-80-10 McClellan Polymer  
**AMOUNT\$:** \$820.00

<b>FRACTION #</b>	<b>NAME</b>	<b>TEST</b>	<b>RECEIPT</b>	<b>PRICE</b>
			<b>VAC./PRES.</b>	
01A	Poly-CIN-026	TO-14	2.0 "Hg	\$205.00
02A	Poly-CEN-027	TO-14	2.5 "Hg	\$205.00
03A	Poly-CIN-028	TO-14	2.0 "Hg	\$205.00
04A	Poly-CEN-029	TO-14	1.5 "Hg	\$205.00
05A	Method Spike	TO-14	NA	NC
06A	Lab Blank	TO-14	NA	NC

10/12/95  
S  
Noguerol

CERTIFIED BY: Rinda L. Furrer  
Laboratory Director

DATE: 10/6/95

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA 95630  
(916) 985-1000 • (800) 985-5955 • FAX (916) 985-1020

# AIR TOXICS LTD.

SAMPLE NAME: Poly-CIN-026

ID#: 9510006A-01A

EPA METHOD TO-14 GC/MS Full Scan

**File Name:** 5100310      **Date of Collection:** 9/30/95  
**Dil. Factor:** 2700      **Date of Analysis:** 10/3/95  
**Analyst's Initials:** MH

Compound	Det. Limit (ppbv)	Amount (ppbv)
Vinyl Chloride	1400	2400
1,1-Dichloroethene	1400	Not Detected
Freon 113	1400	Not Detected
cis-1,2-Dichloroethene	1400	25000
Chloroform	1400	2500
1,1,1-Trichloroethane	1400	Not Detected
Benzene	1400	3300
Trichloroethene	1400	720000
Toluene	1400	2200
Tetrachloroethene	1400	Not Detected
m,p-Xylene	1400	9500
o-Xylene	1400	8200
Acetone	5400	Not Detected

Container Type: 1 Liter Summa Canister

<u>Surrogates</u>	<u>% Recovery</u>	<u>Method Limits</u>
Octafluorotoluene	94	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	82	70-130

# AIR TOXICS LTD.

SAMPLE NAME: Poly-CEN-027

ID#: 9510006A-02A

EPA METHOD TO-14 GC/MS Full Scan

File Name:	5100311	Date of Collection:	9/30/95
Dil. Factor:	2800	Date of Analysis:	10/3/95
Analyst's Initials:	MH		

Compound	Det. Limit (ppbv)	Amount (ppbv)
Vinyl Chloride	1400	1600
1,1-Dichloroethene	1400	Not Detected
Freon 113	1400	Not Detected
cis-1,2-Dichloroethene	1400	24000
Chloroform	1400	2500
1,1,1-Trichloroethane	1400	Not Detected
Benzene	1400	2600
Trichloroethene	1400	690000
Toluene	1400	2100
Tetrachloroethene	1400	Not Detected
m,p-Xylene	1400	19000
o-Xylene	1400	22000
Acetone	5600	Not Detected

Container Type: 1 Liter Summa Canister

<u>Surrogates</u>	<u>% Recovery</u>	<u>Method Limits</u>
Octafluorotoluene	105	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	75	70-130

# AIR TOXICS LTD.

SAMPLE NAME: Poly-CIN-028

ID#: 9510006A-03A

EPA METHOD TO-14 GC/MS Full Scan

File Name:

5100313

Date of Collection: 10/2/95

Dil. Factor:

2700

Date of Analysis: 10/3/95

Analyst's Initials:

MH

Compound	Det. Limit (ppbv)	Amount (ppbv)
Vinyl Chloride	1400	2000
1,1-Dichloroethene	1400	Not Detected
Freon 113	1400	Not Detected
cis-1,2-Dichloroethene	1400	25000
Chloroform	1400	2400
1,1,1-Trichloroethane	1400	Not Detected
Benzene	1400	2700
Trichloroethene	1400	660000
Toluene	1400	1600
Tetrachloroethene	1400	Not Detected
m,p-Xylene	1400	9600
o-Xylene	1400	7200
Acetone	5400	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	% Recovery	Method Limits
Octafluorotoluene	98	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	84	70-130

# AIR TOXICS LTD.

SAMPLE NAME: Poly-CEN-029

ID#: 9510006A-04A

EPA METHOD TO-14 GC/MS Full Scan

File Name:	5100314	Date of Collection:	10/2/95
Dil. Factor:	2700	Date of Analysis:	10/3/95
Analyst's Initials:	MH		

Compound	Det. Limit (ppbv)	Amount (ppbv)
Vinyl Chloride	1400	2100
1,1-Dichloroethene	1400	Not Detected
Freon 113	1400	Not Detected
cis-1,2-Dichloroethene	1400	27000
Chloroform	1400	2500
1,1,1-Trichloroethane	1400	Not Detected
Benzene	1400	3700
Trichloroethylene	1400	720000
Toluene	1400	1900
Tetrachloroethylene	1400	Not Detected
m,p-Xylene	1400	5400
o-Xylene	1400	3800
Acetone	5400	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	% Recovery	Method Limits
Octafluorotoluene	105	70-130
Toluene-d8	95	70-130
4-Bromofluorobenzene	77	70-130

# AIR TOXICS LTD.

SAMPLE NAME: Method Spike

ID#: 9510006A-05A

EPA METHOD TO-14 GC/MS Full Scan

File Name:

5100302

Date of Collection: NA

Dil. Factor:

1.0

Date of Analysis: 10/3/95

Analyst's Initials:

MH

Compound	Det. Limit (ppbv)	% Recovery
Vinyl Chloride	0.50	82
1,1-Dichloroethene	0.50	95
Freon 113	0.50	92
cis-1,2-Dichloroethene	0.50	97
Chloroform	0.50	95
1,1,1-Trichloroethane	0.50	99
Benzene	0.50	89
Trichloroethene	0.50	82
Toluene	0.50	90
Tetrachloroethene	0.50	82
m,p-Xylene	0.50	93
o-Xylene	0.50	89
Acetone	2.0	103

Container Type: NA

Surrogates	% Recovery	Method Limits
Octafluorotoluene	99	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	95	70-130

# AIR TOXICS LTD.

SAMPLE NAME: Lab Blank

ID#: 9510006A-06A

EPA METHOD TO-14 GC/MS Full Scan

File Name:	5100305	Date of Collection: NA
Dil. Factor:	1.0	Date of Analysis: 10/3/95
Analyst's Initials:	MH	

Compound	Det. Limit (ppbv)	Amount (ppbv)
Vinyl Chloride	0.50	Not Detected
1,1-Dichloroethene	0.50	Not Detected
Freon 113	0.50	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected
Chloroform	0.50	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected
Benzene	0.50	Not Detected
Trichloroethene	0.50	Not Detected
Toluene	0.50	Not Detected
Tetrachloroethene	0.50	Not Detected
m,p-Xylene	0.50	Not Detected
o-Xylene	0.50	Not Detected
Acetone	2.0	Not Detected

Container Type: NA

Surrogates	% Recovery	Method Limits
Octafluorotoluene	107	70-130
Toluene-d8	93	70-130
4-Bromofluorobenzene	71	70-130

## **CHAIN OF CUSTODY RECORD**

**USE A BALLPOINT PEN AND PRESS FIRMLY  
THE INSTRUCTIONS FOR FILLING OUT  
THIS FORM ARE ON THE BACK**

**RADIANT**  
CORPORATION

**10389 ROCKINGHAM ROAD, SACRAMENTO, CA 95827  
(916) 362-5332**

### **TASK OR SUB TASK (one per form):**

WHITE - COORDINATOR / GOLDENROD - PROJECT DIRECTOR / PINK - SAMPLE CONTROL / YELLOW - LABORATORY / BLUE - LABORATORY RECEIPT

RADIANT ANALYTICAL SERVICES  
FPAS REPORT  
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Client MCCLELLAN AFBFacility                   Client Code MCCEL TCLPWork Order # 9509431

*[Signature]*  
Certified By  
Date 10/16/95

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*[Signature]*  
John M.  
TU 73

10/12/95 15:07:28

W O R K   O R D E R   S U M M A R Y

Report RADIAN CORPORATION  
To 10395 OLD PLACERVILLE ROAD  
SACRAMENTO, CA 95827  
Attention CAROL GUILZA-KONTONICKAS  
Phone SAC

Client Code MCCLELLAN TCLP  
Client MCCLELLAN AFB  
Facility \_\_\_\_\_  
Work ID TCLP-8240

Work Order # 9509431  
Page 1

RCN 602-125-80-10

Prepared Radian Analytical Services  
By 14046 Summit Dr., Bldg. B  
P. O. Box 201088  
Austin, TX 78720-1088  
512/244-0855  
CSC JALINDSEY

Case # NA  
SDG # NA  
RAS # 50601AJAL

Project Sample ID/ Description	Lab Sample ID	Test Code(s)	Method Description
POLY-APN-015	01A LEACHATE	826SBTLC DISPWA00	Volatile Organics by GC/MS Sample Disposal Charge
TBLK953973	02A LEACHATE	826SBTLC	Volatile Organics by GC/MS
POLY-APN-015	03A MS	826SBMMS	Volatile Organics by GC/MS
	04A MSD	826SBMMS	Volatile Organics by GC/MS

**ANALYTICAL PROTOCOL SUMMARY**Work Order # 9509631  
Page 2**FLAG DEFINITIONS**

Flag	Definition
< DL	Result less than stated Detection Limit and greater than or equal to zero.
NA	Analyte concentration not available for this analysis.
NC	RPD and/or % Recovery not calculated. See Narrative for explanation.
ND	Not detected. No instrument response for analyte or result less than zero.
NR	Not reported. Result greater than or equal to stated Detection Limit and less than specified Reporting Limit.
NS	Analyte not spiked.
B	Analyte detected in method blank at concentration greater than the Reporting Limit (and greater than zero).
C	Confirming data obtained using second GC column or GCMS.
E	Analyte concentration exceeded calibration range.
F	Interference or coelution suspected. See Narrative for explanation.
H	Presence of analyte previously confirmed by historical data.
I	Analyte identification suspect. See Narrative for explanation.
J	Result is less than stated Detection Limit but greater than or equal to specified Reporting Limit.
K	Peak did not meet method identification criteria. Analyte not detected on other GC column.
M	Result modified from previous Report. See Narrative for explanation.
P	Analyte not confirmed. Results from primary and secondary GC columns differ by greater than a factor of 3.
Q	QC result does not meet tolerance in Protocol Specification.
R	Result reported elsewhere.
S	Analyte concentration obtained using Method of Standard Additions (MSA).
T	Second column confirmational analysis not performed.
X	See Narrative for explanation.
Y	See Narrative for explanation.
Z	See Narrative for explanation.

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**ANALYTICAL PROTOCOL SUMMARY**

Work Order # 9509431

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Client MCCLELLAN AFB

Facility \_\_\_\_\_

Client Code MCCLEL TCLP

Method Volatile Organics SW8260

Specification # 826S

Project Sample ID/Description	Lab Sample ID	Test Code(s)	Extraction/Digestion Batch #	Analysis Batch #
POLY-APN-015	9509431-01A	826SWBTL	NA	MSMSDA51008211602
POLY-APN-015	9509431-01A	826SWBTL	NA	MSMSDA51008211602

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Method Volatile Organics Sub8260A  
Test Code 826SBTL

R E S U L T S   S U M M A R Y

Work Order # 9509431  
Page 4

Project Sample ID:	POLY-APN-015	POLY-APN-015
Lab ID:	9509431-01A LEACHA	9509431-01A LEACHA
File ID:	F1008519	F1008520
Date Collected:	09/29/95	09/29/95
Date Prepared:		
Date Analyzed:	10/09/95 12:40:00	10/09/95 13:31:00
Dilution Factor:	1000	100
Matrix:	Water	Water
Units:	ug/L	ug/L
Report as:	received	received
Column:		
Analyte	Conc.	DL
Benzene	ND	503
2-Butanone (MEK)	ND	2320
Carbon tetrachloride	ND	566
Chlorobenzene	ND	591
Chloroform	ND	678
1,2-Dichloroethane	5830	791
1,1-Dichloroethene	ND	802
Tetrachloroethene	ND	674
Trichloroethene	15600	438
Vinyl chloride	ND	738

high mg  
rec'd  
726.1

## RESULTS SUMMARY (Cont'd)

Work Order # 9509431  
Page 5

Method Volatile Organics SW8260A  
Test Code 826SWBTI

Project Sample ID:	POLY-APN-015	POLY-APN-015	
Lab ID:	9509431-01A LEACHA	9509431-01A LEACHA	DL
File ID:	F1008519	F1008520	
Date Collected:	09/29/95	09/29/95	
Date Prepared:			
Date Analyzed:	10/09/95 12:40:00	10/09/95 13:31:00	
Dilution Factor:	1000	100	
Matrix:	Water	Water	
Units:	ug/L	ug/L	
Report as:	received	received	
Column:			
Analyte	Conc.	DL	Conc.
	Conc.	DL	Conc.

Surrogate(s)	Recovery %	Recovery %	Recovery %	Recovery %
1,4-Bromo- <i>m</i> -fluorobenzene	89	90		
1,2-Dichloroethane- <i>d</i> 4	65	78		
Toluene- <i>d</i> 8	95	92		

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**INITIAL CALIBRATION**Work Order # 9509431  
Page 6Sol'n # MS-VOA-STD-3 B-24  
Method Volatile Organics SW8260A  
Test Code 826SWB00Initial Calibration # MSDA950911000000  
Calibration Date 09/11/95 00:00:00Instrument MSDA  
Analyst MER  
Reviewer APS

Analytes	Response Factor	Response Factor Reference Conc. ug/L	Response				
						Reference Conc.	Conc.
Dichlorodifluoromethane	2.999	2.628 10	2.692 20	2.752 50	2.775 100	200	2.77 5.08
Chloromethane SPCC	3.238	2.890 10	2.806 20	2.844 50	2.713 100	200	2.90 6.93
Vinyl chloride CCC	2.747	2.489 10	2.371 20	2.440 50	2.252 100	200	2.46 7.46
Bromomethane	1.773	1.609 10	1.577 20	1.575 50	1.497 100	200	1.61 6.35
Chloroethane	1.123	0.964 10	0.966 20	0.937 50	0.917 100	200	0.981 8.33
Trichlorofluoromethane	2.972	2.633 10	2.183 20	2.563 50	2.368 100	200	2.54 11.7
Acrolein	0.337	0.329 50	0.301 100	0.322 250	0.298 500	1000	0.317 5.42
Acetonitrile	0.135	0.123 50	0.131 100	0.127 250	0.130 500	1000	0.129 3.48
Acetone	0.587	0.430 10	0.395 20	0.520 50	0.456 100	200	0.478 16.0
Iodomethane	3.079	2.980 10	3.067 20	3.017 50	2.956 100	200	3.02 1.77

**INITIAL CALIBRATION** Cont'dWork Order # 9509431  
Page 7Initial Calibration # MSDA950911000000  
Calibration Date 09/11/95 00:00:00Sol'n # MS-VOA-STD-3 D.24  
Method Volatile Organics SW8260A  
Test Code 826SB00Instrument MSDA  
Analyst MER  
Reviewer APS

Analytes	Response Factor									
	Reference Conc. ug/L	Conc. ug/L								
1,1-Dichloroethene ccc	1.481	1.404	1.427	1.368	1.349	200			1.41	3.69
Carbon disulfide	5.131	4.959	4.968	4.890	4.779	200			4.95	2.60
1,1,2-Trichlorotrifluoroethane	1.555	1.497	1.553	1.462	1.480	200			1.51	2.82
Acrylonitrile	0.595	0.559	0.609	0.579	0.572	200			0.583	3.36
3-Chloropropene	2.492	2.408	2.366	2.239	2.076	200			2.32	7.01
Methylene chloride	2.609	2.334	2.285	1.562	1.488	200			2.06	24.4
trans-1,2-Dichloroethene	1.395	1.361	1.381	1.327	1.318	200			1.36	2.46
Propanenitrile	0.163	0.152	0.155	0.171	0.171	1000			0.162	5.43
1,1-Dichloroethane SPCC	2.338	2.253	2.257	2.194	2.169	200			2.24	2.92
Vinyl acetate	3.146	2.756	2.802	2.758	2.641	200			2.82	6.79

10/12/95 15:07:28

**INITIAL CALIBRATION Cont'd**Initial Calibration # MSDA950911000000Calibration Date 09/11/95 00:00:00

Sol'n # MS-VOA-STD-3 p.24  
 Method Volatile Organics SW8260A  
 Test Code 826SWB00

Work Order # 9509431  
Page 8

Instrument MSDA  
 Analyst MER  
 Reviewer APS

Analytes	Response Factor									
	Reference Conc. ug/L	Conc. ug/L								
2-Chloro-1,3-butadiene	1.113 50	1.215 100	1.077 250	0.938 500	0.804 1000					1.03 15.6
2-Butanone(MEK)	0.605 10	0.568 20	0.572 50	0.534 100	0.485 200					0.553 8.23
Tetrahydrofuran	0.146 10	0.173 20	0.190 50	0.208 100	0.191 200					0.182 12.9
cis-1,2-Dichloroethene	1.308 10	1.279 20	1.284 50	1.266 100	1.254 200					1.28 1.59
Chloroform CCC	2.216 10	2.062 20	2.113 50	2.069 100	2.068 200					2.11 3.09
1,1,1-Trichloroethane	2.144 10	2.077 20	2.136 50	2.093 100	2.138 200					2.12 1.44
1,2-Dichloroethane	2.117 10	2.097 20	2.133 50	2.084 100	2.071 200					2.10 1.19
Benzene	1.180 10	1.141 20	1.150 50	1.107 100	1.040 200					1.12 4.76
Carbon tetrachloride	0.335 10	0.333 20	0.343 50	0.344 100	0.342 200					0.339 1.48
2-Hexanone	0.458 10	0.470 20	0.472 50	0.449 100	0.459 200					0.462 2.05

**INITIAL CALIBRATION cont'd**Work Order # 9509431Page 2

Initial Calibration # MSDA950911000000  
 Calibration Date 09/11/95 00:00:00  
 Method Volatile Organics S8260A  
 Test Code 826SWB00

Instrument MSDA  
 Analyst MER  
 Reviewer APS

Analytes	Response Factor							
	Reference Conc. ug/L							
4-Methyl-2-pentanone(MIBK)	0.281 10	0.268 20	0.292 50	0.281 100	0.284 200		0.281 200	0.281 3.07
1,2-Dichloropropane	0.329 10	0.322 20	0.326 50	0.320 100	0.296 200		0.319 200	0.319 4.11
Trichloroethene	0.324 10	0.312 20	0.319 50	0.312 100	0.312 200		0.316 200	0.316 1.74
Dibromomethane	0.221 10	0.211 20	0.211 50	0.212 100	0.206 200		0.212 200	0.212 2.57
Bromodichloromethane	0.357 10	0.361 20	0.373 50	0.375 100	0.376 200		0.368 200	0.368 2.38
Methyl methacrylate	0.205 10	0.202 20	0.215 50	0.220 100	0.219 200		0.212 200	0.212 3.88
2-Chloroethyl vinyl ether	0.226 10	0.220 20	0.221 50	0.227 100	0.218 200		0.222 200	0.222 1.76
trans-1,3-Dichloropropene	0.483 10	0.472 20	0.491 50	0.488 100	0.479 200		0.483 200	0.483 1.55
cis-1,3-Dichloropropene	0.425 10	0.419 20	0.442 50	0.438 100	0.418 200		0.428 200	0.428 2.57
Toluene	0.709 10	0.685 20	0.702 50	0.681 100	0.648 200		0.685 200	0.685 3.46

**INITIAL CALIBRATION Cont'd**Work Order # 9509431Page 10

Sol'n # #MS-VOA-STD-3 B.24  
 Method Volatile Organics SW8260A  
 Test Code 826S4B00

Initial Calibration # MSDA950911000000  
 Calibration Date 09/11/95 00:00:00

Instrument MSDA  
 Analyst MER  
 Reviewer APS

Analytes	Response Factor									
	Reference Conc. ug/L	Conc. ug/L								
1,1,2-Trichloroethane	0.623	0.601	0.627	0.620	0.620	0.610	0.610	0.610	0.616	0.72
Ethyl methacrylate	0.888	0.886	0.914	0.934	0.937	0.937	0.937	0.937	0.908	3.32
Dibromochloromethane	0.699	0.695	0.718	0.741	0.747	0.747	0.747	0.747	0.720	3.29
1,2-Dibromoethane	0.705	0.683	0.700	0.695	0.692	0.692	0.692	0.692	0.695	1.20
Tetrachloroethene	0.556	0.555	0.542	0.536	0.557	0.557	0.557	0.557	0.549	1.74
Chlorobenzene SPCC	1.884	1.808	1.847	1.819	1.808	1.808	1.808	1.808	1.83	1.78
1,1,1,2-Tetrachloroethane	0.628	0.607	0.622	0.635	0.645	0.645	0.645	0.645	0.627	2.27
Ethylbenzene	0.959	0.925	0.952	0.936	0.931	0.931	0.931	0.931	0.941	1.53
m&p-Xylene	1.192	1.146	1.152	1.130	1.096	1.096	1.096	1.096	1.14	3.05
Bromoform SPCC	0.404	0.420	0.450	0.473	0.488	0.488	0.488	0.488	0.447	7.86

## INITIAL CALIBRATION Cont'd

Sol'n # #MS-VOA-STD-3 p.24  
Method Volatile organics  
Test Code 826SWB00

Initial Calibration # MSDA950911000000  
Calibration Date 09/11/95 00:00:00

Work Order # 9509431  
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Instrument MSDA  
Analyst MER  
Reviewer APS

10/12/95 15:07:28

**ANALYSIS BATCH SUMMARY**  
Analysis Batch # MSMSDA51008211602

Work Order # 9509431  
Page 12

Method Volatile Organics SU8260  
Test Code 826SWB00  
Initial Calibration # MSDA950911000000  
Calibration Date 09/11/95

Analysis Start Date/Time 10/08/95 21:16:00  
Analysis Stop Date/Time 10/09/95 19:49:00

Instrument MSDA  
Analyst MER  
Reviewer APS

Sequence/Analysis Time	Project Sample ID	Lab Sample ID	Sample Type	Analysis File #
1	10/08/95 21:16:00	BFB	GCMS Tune	F1008507
2	10/08/95 21:29:00	SB	Laboratory Blank	F1008508
3	10/08/95 21:53:00	VSTD CAL	Continuing Calibration Check	F1008509
4	10/08/95 22:51:00	VSTD CAL	Continuing Calibration Check	F1008510
5	10/08/95 23:17:00	SB	Laboratory Blank	F1008511
6	10/08/95 23:48:00	LC956007	Lab Control Sample	F1008512
7	10/09/95 00:12:00	LC956008	Lab Control Sample Dup	F1008513
8	10/09/95 00:36:00	BLK954015	Laboratory Blank	F1008514
9	10/09/95 10:11:00	BFB	GCMS Tune	F1008515
10	10/09/95 10:24:00	SB	Laboratory Blank	F1008516
11	10/09/95 10:48:00	VSTD CAL	Continuing Calibration Check	F1008517
12	10/09/95 11:47:00	VSTD CAL	Continuing Calibration Check	F1008518
13	10/09/95 12:40:00	9509431-01A	Sample	F1008519
14	10/09/95 13:31:00	9509431-01A	Sample	F1008520
15	10/09/95 14:17:00	9509431-03A	Matrix Spike	F1008521
16	10/09/95 14:41:00	9509431-04A	Matrix Spike Dup	F1008522
17	10/09/95 15:06:00	SB	Laboratory Blank	F1008523
18	10/09/95 15:30:00	9509431-02A	Laboratory Blank	F1008524
27	10/09/95 19:24:00	SB	Laboratory Blank	F1008533

**R E S U L T S**

Extraction Batch #

Analysis Batch # MSMSDA510088211602  
 TCLP Batch # TCLCIP509281755

Project Sample ID POLY-APN-015  
 Lab Sample ID 9509431-01A LEACHA  
 File # F1008519  
 Method Volatile Organics SW8260A  
 Test Code 8265SBTL

Date Collected	<u>09/29/95</u>	Instrument	<u>MSDA</u>
Date Received	<u>09/23/95</u>	Column	<u> </u>
Date Prepared	<u> </u>	Analyst	<u>MER</u>
Date Analyzed	<u>10/09/95 12:40:00</u>	Reviewer	<u>APS</u>

Analyte	CAS #	Aliquot Mass/Volume			Detection Limit ug/L	Reporting Limit ug/L
		5.0 (mL)	Extract/Digestate Volume	5.0 (mL)		
		Dilution Factor	1000			
Benzene	71-43-2	ND	ND	ND	503	503
2-Butanone(MEK)	78-93-3	ND	ND	ND	2320	2320
Carbon tetrachloride	56-23-5	ND	ND	ND	566	566
Chlorobenzene	108-90-7	ND	ND	ND	591	591
Chloroform	67-66-3	ND	ND	ND	678	678
1,2-Dichloroethane	107-06-2	5830	5830	ND	791	791
1,1-Dichloroethene	75-35-4	ND	ND	ND	802	802
Tetrachloroethene	127-18-4	ND	ND	ND	674	674
Trichloroethene	79-01-6	15600	15600	ND	438	438
Vinyl chloride	75-01-4	ND	ND	ND	738	738

Surrogate(s)	CAS #	Spiked Conc. ug/L	Measured Concentration ug/L	Specification Limits		
				Recovery %	Low %	High %
1,4-Bromofluorobenzene	460-00-4	50000	44700	89	75	113
1,2-Dichloroethane-d4	17070-07-0	50000	32400	65	56	144
Toluene-d8	2037-26-5	50000	47500	95	85	115

10/12/95 15:07:28

**R E S U L T S**

Extraction Batch # POLY-APN-015  
 Analysis Batch # MSMSDA51008211602  
 TCLP Batch # TCTCLP509281755

Project Sample ID POLY-APN-015  
 Lab Sample ID 9509431-01A LEACHA  
 File # F1008520  
 Method Volatile Organics SW8260A  
 Test Code 826SBTL

Date Collected 09/29/95  
 Date Received 09/23/95  
 Date Prepared 10/09/95  
 Date Analyzed 13:31:00

Instrument MSDA  
 Column    
 Analyst MER  
 Reviewer APS

Analyte	CAS #	Aliquot Mass/Volume			Detection Limit ug/L	Reporting Limit ug/L
		5.0 (mL)	Extract/Digestate Volume 5.0 (mL)	Dilution Factor 100		
		Measured Concentration ug/L				
Benzene	71-43-2	60.0	ND	ND	50.3	50.3
2-Butanone(MEK)	78-93-3		ND	ND	232	232
Carbon tetrachloride	56-23-5		ND	ND	56.6	56.6
chlorobenzene	108-90-7		ND	ND	59.1	59.1
Chloroform	67-66-3		ND	ND	67.8	67.8
1,2-Dichloroethane	107-06-2		6550	6550	79.1	79.1
1,1-Dichloroethene	75-35-4		ND	ND	80.2	80.2
Tetrachloroethene	127-18-4		ND	ND	67.4	67.4
Trichloroethene	79-01-6	14900		43.8	43.8	43.8
Vinyl chloride	75-01-4	ND	ND	73.8	73.8	73.8

Surrogate(s)	CAS #	Spiked Conc. ug/L	Measured Concentration ug/L	Recovery %		Specification Limits
				Low %	High %	
1,4-Bromo[fluorobenzene	460-00-4	5000	4520	90	75	113
1,2-Dichloroethane-d4	17070-07-0	5000	3880	78	56	144
Toluene-d8	2037-26-5	5000	4610	92	85	115

## LABORATORY BLANK INFORMATION

Work Order # 9509431  
 Extraction Batch # \_\_\_\_\_  
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 Analysis Batch # HMSDAS51008211601

Lab Sample ID BLK954015  
 File # F1008514  
 Method Volatile Organics SW8260A  
 Test Code 8265MBTL

Date Prepared 10/09/95 00:36:00  
 Date Analyzed \_\_\_\_\_  
 Instrument MSDA  
 Column \_\_\_\_\_  
 Analyst MER  
 Reviewer APS  
 Spikes Subset \_\_\_\_\_  
 Specs Subset \_\_\_\_\_

Analyte	Aliquot Mass/Volume			Detection Limit ug/L	Reporting Limit ug/L
	Aliquot Mass/Volume	5.0 (mL)	Extract/digestate Volume		
	5.0 (mL)	5.0 (mL)	Dilution Factor <u>1</u>		
	Measured Conc. ug/L				
Benzene	ND			0.503	0.503
2-Butanone(MEK)	ND			2.32	2.32
Carbon tetrachloride	ND			0.566	0.566
Chlorobenzene	ND			0.591	0.591
Chloroform	ND			0.678	0.678
1,2-Dichloroethane	ND			0.791	0.791
1,1-Dichloroethene	ND			0.802	0.802
Tetrachloroethene	ND			0.674	0.674
Trichloroethene	ND			0.438	0.438
Vinyl chloride	ND			0.738	0.738

Surrogate(s)	Spiked Conc. ug/L	Measured Conc. ug/L	Recovery %	Specification Limits	
				Low %	High %
1,4-Bromofluorobenzene	50.0	45.0	90	83	113
1,2-Dichloroethane-d4	50.0	33.0	66	59	135
Toluene-d8	50.0	47.1	94	87	113

## LABORATORY BLANK INFORMATION

Work Order # 9509431  
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Lab Sample ID 9509431-02A LEACHA  
 File # E1008524  
 Method Volatile Organics SU8260A  
 Test Code 826SHBTL

Extraction Batch # MSMSDA51008211602TCLP Batch # TCTCLP509281755

Date Prepared	<u>10/09/95</u>	Date Analyzed	<u>10/09/95 15:30:00</u>
Instrument	<u>MSDA</u>	Column	<u>---</u>
Analyst	<u>MER</u>	Reviewer	<u>APS</u>

Analyte	Aliquot Mass/Volume			Detection Limit ug/L	Reporting Limit ug/L
	<u>5.0</u> (mL)	<u>Extract/Digestate Volume</u>	<u>5.0</u> (mL)		
Benzene	ND	ND	ND	5.03	5.03
2-Butanone (MEK)	ND	ND	ND	23.2	23.2
Carbon tetrachloride	ND	ND	ND	5.66	5.66
Chlorobenzene	ND	ND	ND	5.91	5.91
Chloroform	ND	ND	ND	6.78	6.78
1,2-Dichloroethane	ND	ND	ND	7.91	7.91
1,1-Dichloroethene	ND	ND	ND	8.02	8.02
Tetrachloroethene	ND	ND	ND	6.74	6.74
Trichloroethene	ND	ND	ND	4.38	4.38
Vinyl chloride	ND	ND	ND	7.38	7.38

Surrogate(s)	Spiked Conc. ug/L	Measured Conc.. ug/L	Recovery %	Specification Limits	
				Low %	High %
1,4-Bromofluorobenzene	500	443	88	75	113
1,2-Dichloroethane-d4	500	324	65	56	144
Toluene-d8	500	477	95	85	115

**LABORATORY CONTROL SAMPLE**

Extraction Batch # MSMSDA51008211600  
 Analysis Batch # MSMSDA51008211600

Method Volatile Organics SIB260A  
 Test Code 826SUBTL

Date Prepared  
 Date Analyzed 10/09/95 00:12:00

Instrument <u>MSDA</u>	Column <u>LCS</u>	Reporting Subset <u>Spikes</u>	Matrix <u>H</u>
Analyst <u>MER</u>	Specs <u>Subset</u>	Report As <u>received</u>	% Moisture
Reviewer <u>APS</u>	Aliquot Mass or Vol <u>5.0 (mL)</u>	Extract Mass or Vol <u>5.0 (mL)</u>	

Analyte	Control Std. #	Vol. Added LCS 5 ul	Surrogate Sol'n # 1,2-DCA-d <sub>4</sub> Toluene-d <sub>8</sub> 1,4-BFB	Vol. Added 5 ul	Lab Sample ID LCS956007 File ID F1008512	LCS		LCS Duplicate		Recovery	
						Spiked Conc. ug/L	Measured Conc. ug/L	Spiked Conc. ug/L	Measured Conc. ug/L	Lab Sample ID LCS956008 File ID F1008513	Spec. Limits
Benzene		20.0	21.1	105	20.0	21.6	108	77	135	2.8	10
2-Butanone (MEK)		100	123	123	100	139	0.1	139	182	12	50
Carbon tetrachloride		20.0	14.6	73	20.0	14.6	73	70	140	0	10
Chlorobenzene		20.0	21.1	105	20.0	21.5	107	74	124	1.9	12
Chloroform		20.0	19.1	95	20.0	19.7	98	66	130	3.1	16
1,2-Dichloroethane		20.0	15.0	75	20.0	13.4	67	58	142	11	26
1,1-Dichloroethene		20.0	18.3	92	20.0	18.5	93	45	149	1.1	29
Tetrachloroethene		20.0	22.2	111	20.0	22.5	113	68	126	1.8	11
Trichloroethene		20.0	19.4	97	20.0	20.0	100	75	119	3.0	11
Vinyl chloride		20.0	14.5	72	20.0	14.6	73	37	146	1.4	38

## Surrogate(s)

1,4-Bromo fluorobenzene	50.0	46.8	94	50.0	46.1	92	83	113
1,2-Dichloroethane-d <sub>4</sub>	50.0	36.7	74	50.0	32.7	65	59	135
Toluene-d <sub>8</sub>	50.0	46.5	93	50.0	47.7	96	87	113

**MATRIX SPIKE(S)**

Extraction Batch #

Analysis Batch # MNSDA51008211602

TCLP Batch # TCCLP509281755

Project Sample ID POLY-APN-015  
 Method Volatile Organics SW8260A  
 Test Code 826SBMBS

Date Collected 09/29/95  
 Date Received 09/23/95  
 Date Prepared \_\_\_\_\_  
 Date Analyzed 10/09/95 14:41:00

Instrument	MSDA	Reporting Subset	Matrix Y
Column	_____	Spikes Subset	Report As received
Analyst	MER	Species Subset	% Moisture
Reviewer	APS	Specs	_____

Spike Sol'n #	Vol. Added	Sample Lab Sample ID	Spiked Sample Lab Sample ID
Matrix spike	5 <u>uL</u>	9509431-01A LEACHA	9509431-03A MS
Surrogate Sol'n	Vol. Added	File # F1008520	File # F1008521
1,2-DCA-d6	5 <u>uL</u>	Aliquot Mass/Vol 5.0 <u>(mL)</u>	Aliquot Mass/Vol 5.0 <u>(mL)</u>
Toluene-d8	5 <u>uL</u>	Extract Mass/Vol 5.0 <u>(mL)</u>	Extract Mass/Vol 5.0 <u>(mL)</u>
1,4-BFB	5 <u>uL</u>	Dil Fact. 100	Dil Fact. 100
Spike Sol'n Conc. ug/L		Measured Conc. ug/L	Measured Conc. ug/L
Analyte		Spiked Conc. ug/L	Spiked Conc. ug/L
Benzene	50000	60.0	5310
Chlorobenzene	50000	ND	5590
1,1-Dichloroethene	50000	ND	4390
Toluene	50000	ND	5320
Trichloroethene	50000	14900	5000
		20500 E	21200 E

**Surrogate(s)**

1,4-Bromofluorobenzene	50000	4520	5000	4630	92	5000	4620	92	75	113
1,2-Dichloroethane-d4	50000	3880	5000	3280	66	5000	3280	66	56	144
Toluene-d8	50000	4610	5000	4720	94	5000	4730	94	85	115

**CONTINUING (OR DAILY) CALIBRATION  
VERIFICATION**

Analysis Batch # MSMSDA51008211600Initial Calibration # MSDAP50911000000

Lab Sample ID VSTDCAL  
 File # F1008510  
 Method Volatile Organics SW8260A  
 Test Code 826SMB00

Date Analyzed 10/08/95 22:51:00

Reporting Subset \_\_\_\_\_  
 Spikes Subset \_\_\_\_\_  
 Specs Subset \_\_\_\_\_

Instrument MSDA  
 Analyst MER  
 Reviewer APS

Analyte	Measured Concentration ug/L	Reference Concentration ug/L	Recovery %	Recovery Specification Limits	
				Low %	High %
Acetone	64.0	50.0	128		
Acetonitrile	182	250	73		
Acrolein	185	250	74		
Acrylonitrile	42.6	50.0	85		
Benzene	52.8	50.0	106		
Bromodichloromethane	42.9	50.0	86		
Bromoform	42.5	50.0	85		
Bromomethane	43.5	50.0	87		
2-Butanone (MEK)	58.7	50.0	117		
Carbon disulfide	44.5	50.0	89		
Carbon tetrachloride	39.7	50.0	80		
Chlorobenzene	55.2	50.0	110		
Chloroethane	54.8	50.0	110		
2-Chloroethyl vinyl ether	31.0	50.0	62		
Chloroform	49.7	50.0	99	75	125
Chloromethane	38.8	50.0	78		
3-Chloropropene	48.2	50.0	96		
1,2-Dibromo-3-chloropropane	36.0	50.0	72		
Dibronochloromethane	46.2	50.0	92		
1,2-Dibromoethane	49.5	50.0	99		
Dibromomethane	42.9	50.0	86		
trans-1,4-Dichloro-2-butene	36.7	50.0	73		
1,2-Dichlorobenzene	48.9	50.0	98		
1,3-Dichlorobenzene	51.2	50.0	102		
1,4-Dichlorobenzene	50.4	50.0	101		

**CONTINUING (OR DAILY) CALIBRATION  
VERIFICATION (Cont'd)**
Analysis Batch # MSMSDA51008211600Initial Calibration # MSDA950911000000

Lab Sample ID VSTD CAL  
 File # F1008510  
 Method Volatile Organics SW8260A  
 Test Code 826SWB10

Date Analyzed 10/08/95 22:51:00

Reporting Subset \_\_\_\_\_  
 Spikes Subset \_\_\_\_\_  
 Specs Subset \_\_\_\_\_

Work Order # 9509431Page 20

Instrument MSDA  
 Analyst MER  
 Reviewer APS

Analyte	Measured Concentration ug/L	Reference Concentration ug/L	Recovery %	Recovery Specification Limits	
				Low %	High %
Dichlorodifluoromethane	45.2	50.0	90		
1,1-Dichloroethane	51.1	50.0	102		
1,2-Dichloroethane	39.2	50.0	78		
1,1-Dichloroethene	47.1	50.0	94	75	125
cis-1,2-Dichloroethene	56.6	50.0	113		
trans-1,2-Dichloroethene	54.1	50.0	108		
1,2-Dichloropropane	46.1	50.0	92	75	125
cis-1,3-Dichloropropene	40.8	50.0	82		
trans-1,3-Dichloropropene	43.7	50.0	88		
Ethyl methacrylate	46.8	50.0	94		
Ethybenzene	56.1	50.0	112	75	125
2-Hexanone	47.6	50.0	95		
Iodomethane	46.2	50.0	92		
Methyl methacrylate	43.4	50.0	87		
4-Methyl-2-pentanone (MIBK)	40.6	50.0	81		
Methylene chloride	51.5	50.0	103		
Propanenitrile	240	250	96		
Styrene	50.2	50.0	100		
1,1,2-Tetrachloroethane	47.8	50.0	96		
1,1,2,2-Tetrachloroethane	45.4	50.0	91		
Tetrachloroethene	59.7	50.0	119		
Tetrahydrofuran	42.6	50.0	85		
Toluene	51.8	50.0	104	75	125
1,1,1-Trichloroethane	40.1	50.0	80		
1,1,2-Trichloroethane	50.9	50.0	102		

## CONTINUING (OR DAILY) CALIBRATION

## VERIFICATION (Cont'd)

Analysis Batch # MSMSDA510088211600Initial Calibration # MSDA950911000000Work Order # 9509431  
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Lab Sample ID VSTDCA1  
 File # F1008510  
 Method Volatile Organics SW8260A  
 Test Code B26SWB0

Date Analyzed 10/08/95 22:51:00

Reporting Subset \_\_\_\_\_  
 Spikes Subset \_\_\_\_\_  
 Specs Subset \_\_\_\_\_

Instrument MSDA  
 Analyst MER  
 Reviewer APS

Analyte	Measured Concentration ug/L	Reference Concentration ug/L	Recovery %	Recovery Specification Limits	
				Low %	High %
Trichloroethene	51.5	50.0	103		
Trichlorofluoromethane	35.4	50.0	71		
1,2,3-Trichloropropane	46.7	50.0	93		
1,1,2-Trichlorotrifluoroethane	47.2	50.0	94		
Vinyl acetate	41.4	50.0	83		
Vinyl chloride	40.3	50.0	81		
m&p-Xylene	111	100	111		
o-Xylene	54.2	50.0	108		

Surrogate(s)					
1,4-Bromo fluorobenzene	48.2	50.0	96	83	113
1,2-Dichloroethane-d4	37.1	50.0	74	59	135
Toluene-d8	47.0	50.0	94	87	113

10/12/95 15:07:28

**CONTINUING (OR DAILY) CALIBRATION  
VERIFICATION**

Analysis Batch # MSMSDAS1008211600Initial Calibration # MSDA950911000000

Lab Sample ID VSTDCA1  
 File # F1003518  
 Method Volatile Organics SW8260A  
 Test Code 826SB00

Date Analyzed 10/09/95 11:47:00  
 Reporting Subset \_\_\_\_\_  
 Spikes Subset \_\_\_\_\_  
 Specs Subset \_\_\_\_\_

Instrument MSDA  
 Analyst MER  
 Reviewer APS

Analyte	Measured Concentration ug/L	Reference Concentration ug/L	Recovery Specification Limits		
			Recovery %	Low %	High %
Acetone	60.2	50.0	120		
Acetonitrile	169	250	68		
Acrolein	169	250	68		
Acrylonitrile	38.8	50.0	78		
Benzene	51.1	50.0	102		
Bromodichloromethane	41.1	50.0	82		
Bromoform	38.8	50.0	78		
Bromomethane	41.7	50.0	83		
2-Butanone (MEK)	55.7	50.0	111		
Carbon disulfide	46.4	50.0	93		
Carbon tetrachloride	38.3	50.0	76		
Chlorobenzene	52.6	50.0	105		
Chloroethane	50.3	50.0	101		
2-Chloroethyl vinyl ether	31.1	50.0	62		
Chloroform	47.3	50.0	94		
Chloromethane	37.2	50.0	74		
3-Chloropropene	44.6	50.0	89		
1,2-Dibromo-3-chloropropane	35.9	50.0	72		
Dibromochloromethane	41.6	50.0	83		
1,2-Dibromoethane	46.0	50.0	92		
Dibromomethane	41.3	50.0	83		
trans-1,4-Dichloro-2-butene	35.2	50.0	70		
1,2-Dichlorobenzene	49.3	50.0	99		
1,3-Dichlorobenzene	49.9	50.0	100		
1,4-Dichlorobenzene	49.6	50.0	99		

Work Order # 9509431  
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**CONTINUING (OR DAILY) CALIBRATION****VERIFICATION (Cont'd)**Analysis Batch # MSMSDA51008211600Initial Calibration # MSDA95091100000

Lab Sample ID VSTDCA1  
 File # F1008518  
 Method Volatile Organics SW8260A  
 Test Code 8265SB00

Date Analyzed 10/09/95 11:47:00

Reporting Subset \_\_\_\_\_  
 Spikes Subset \_\_\_\_\_  
 Specs Subset \_\_\_\_\_

Instrument MSDA  
 Analyst MER  
 Reviewer APS

Analyte	Measured Concentration ug/L	Reference Concentration ug/L	Recovery %	Recovery Specification Limits	
				Low %	High %
Dichlorodifluoromethane	44.0	50.0	88		
1,1-Dichloroethane	48.5	50.0	97		
1,2-Dichloroethane	32.5	50.0	65		
1,1-Dichloroethene	46.3	50.0	93	75	125
cis-1,2-Dichloroethene	55.5	50.0	111		
trans-1,2-Dichloroethene	49.7	50.0	100		
1,2-Dichloropropane	44.5	50.0	89	75	125
cis-1,3-Dichloropropene	38.7	50.0	77		
trans-1,3-Dichloropropene	42.6	50.0	85		
Ethyl methacrylate	43.2	50.0	86		
Ethy lbenzene	53.8	50.0	108	75	125
2-Hexanone	45.1	50.0	90		
Iodomethane	46.4	50.0	93		
Methyl methacrylate	40.6	50.0	81		
4-Methyl-2-pentanone (MIBK)	40.3	50.0	81		
Methylene chloride	51.5	50.0	103		
Propanenitrile	221	250	88		
Styrene	48.1	50.0	96		
1,1,1,2-Tetrachloroethane	45.9	50.0	92		
1,1,2,2-Tetrachloroethane	43.1	50.0	86		
Tetrachloroethene	56.2	50.0	112		
Tetrahydrofuran	34.6	50.0	69		
Toluene	50.7	50.0	101	75	125
1,1,1-Trichloroethane	36.4	50.0	73		
1,1,2-Trichloroethane	47.2	50.0	94		

10/12/95 15:07:28

**CONTINUING (OR DAILY) CALIBRATION  
VERIFICATION (Cont'd)**

Analysis Batch # MSMSDAS51008211600

Initial Calibration # MSDA950911000000

Lab Sample ID VSTDICAL  
File # F1008518  
Method Volatile Organics SW8260A  
Test Code 826SWB00

Date Analyzed 10/09/95 11:47:00

Initial Calibration # MSDA950911000000

Work Order # 9509431

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Analyte	Measured Concentration ug/L	Reference Concentration ug/L	Recovery %	Recovery Specification Limits
Trichloroethene	50.1	50.0	100	
Trichlorofluoromethane	34.1	50.0	68	
1,2,3-Trichloropropane	43.5	50.0	87	
1,1,2-Trichlorotrifluoroethane	48.8	50.0	98	
Vinyl acetate	36.4	50.0	73	
Vinyl chloride	39.4	50.0	79	
m,p-Xylene	106	100	106	125
o-Xylene	52.1	50.0	104	

Surrogate(s)	1,4-Bromo fluorobenzene	47.7	50.0	96	83	113
	1,2-Dichloroethane-d4	32.1	50.0	64	59	135
	Toluene-d8	47.7	50.0	95	87	113

10/12/95 15:07:28

**ANALYTICAL PROTOCOL SUMMARY  
COMMENTS / MARRATIVE**

Work Order # 9509431  
Page 25

Method Volatile Organics SW8260 Specification# \_\_\_\_\_

Lab Sample ID Project Sample  
File ID ID/Description Analyte

Flag Comment/Narrative

Corrective Action

QUALITY CONTROL EXCEPTION REPORT  
LEVEL 2 - ANALYTICAL

REPORT COPY 9509431

QCER # 951008-06

Revised: 10/09/95

Analyst: THERESA SHAW Instrument: MSDA Date Analyzed: 10/08/95  
Batch #: MSMSDA51008211600 Matrix: water Status: I  
Prot Spec: 826MSB Analysis File #: F1008522

Lab Sample ID: 9509431-01A Client ID: MCCLEL TCLP CSC: JAL Project Sample ID: POLY-APN-015

**SAMPLE PREPARATION:****PROBLEM IDENTIFICATION**

Sample Went Dry     
Loss of    %  
of Sample     
Emulsion Formed     
Blank Contamination     
Instrument     
Hold Time     
MS/MSD Not Available     
Instrument     
Other (Describe)   

**CORRECTIVE ACTION TAKEN**

Reprepare Sample     
Sample Sent for Analysis     
Resample     
Other (Describe)   

Comments:   **SAMPLE ANALYSIS:****PROBLEM IDENTIFICATION**

Surrogate Recovery     
MS/MSD Recovery X  
LCS/LCSD Recovery     
MS/MSD Precision     
LCS/LCSD Precision     
Standard     
Blank Contamination     
Instrument     
Hold Time     
No MS/MSD Available     
for Batch     
Sample pH     
Dil. Due to Hi-Level     
Non-Target Analytes     
Serial Dilution     
Analytical Spike     
Internal Standard     
Other (Describe)   

**PROBABLE CAUSE**

Matrix Effect X  
Instrument     
Spiking Error     
Contamination     
Coelution     
Unknown     
Other (Describe)   

**CORRECTIVE ACTION TAKEN**

Reprepare Sample     
Reanalyze Sample     
Reanalyze LCS/LCSD     
Recalibrate Instrument     
Analyze Out of Hold Time     
Prepare New Standard     
Flag Data X  
Resample     
Analyze by MSA     
Perform Analytical Spike     
No Action Required     
Level 3 QCER to Follow     
Other (Describe)   

Comments: Sample 9509431-01A had TCE at 126% for the MSD which fails tol. limit of 75-119%. The parent sample had a high level of TCE (145 ppb) which causes fluctuations in the MS/MSD recoveries. All other MS/MSD analytes passed limits. TCE passed tol. limits in the LCS/D.

Distribution: CSC, Lab, Report



QUALITY CONTROL EXCEPTION REPORT  
LEVEL 2 - ANALYTICAL

REPORT COPY 9509431

QCER # 951008-04

Revised: 10/09/95

Analyst: THERESA SHAW      Instrument: MSDA      Date Analyzed: 10/08/95  
Batch #: MSMSDA51008211600      Matrix: water      Status: I  
Prot Spec: 826MSB      Analysis File #: F1008512,13

Lab Sample ID: 9509501-15A      Client ID: MCCLEL TCLP      CSC: JAL      Project Sample ID:

9509431      9510144

## SAMPLE PREPARATION:

## PROBLEM IDENTIFICATION

Sample Went Dry       

## CORRECTIVE ACTION TAKEN

Reprepare Sample       Loss of        %                 Sample Sent for Analysis       of Sample       Resample       Emulsion Formed       Other (Describe)                 Blank Contamination       Instrument       Hold Time       MS/MSD Not Available       Instrument       Other (Describe)       Comments:                 

## SAMPLE ANALYSIS:

## PROBLEM IDENTIFICATION

Surrogate Recovery       

## PROBABLE CAUSE

## CORRECTIVE ACTION TAKEN

MS/MSD Recovery       Matrix Effect       Reprepare Sample       LCS/LCSD Recovery XInstrument       Reanalyze Sample       MS/MSD Precision       Spiking Error       Reanalyze LCS/LCSD       LCS/LCSD Precision       Contamination       Recalibrate Instrument       Standard       Coelution       Analyze Out of Hold Time       Blank Contamination       Unknown XPrepare New Standard       Instrument       Other (Describe)       Flag Data XHold Time       Resample       No MS/MSD Available       Analyze by MSA       for Batch       Perform Analytical Spike       Sample pH       No Action Required       Dil. Due to Hi-Level       Level 3 QCER to Follow       Non-Target Analytes       Other (Describe) XSerial Dilution       

NOTIFIED CSC

Analytical Spike       Internal Standard       Other (Describe)       

Comments: C13DCP failed LCS tolerance limits at 66.56% for 9509501 tol. limits of 67-137%. It also failed in the LCS and LCSD at 66.56% & 69.74% respectively for 9509431 and 9510144 tol. limit of 73-145%. We were not analyzing for C13DCP for any of these worders.

Distribution: CSC, Lab, Report

RADIANT ANALYTICAL SERVICES  
FPAS REPORT  
TABLE OF CONTENTS

Work Order # 9509403

Client MCCLELLAN AFB  
Facility TCLP  
Client Code MCCLEL TCLP

Certified By Julie A Balcock  
Date 10/4/95

Report Form	Analytical Batch ID	Pages	
		From	To
Work Order Summary	TCLP950928174500	1	1
TCLP Batch Summary		2	2

10/03/95 16:41:44

10/03/95 16:41:44

WORK ORDER SUMMARY

Report RADIANT CORPORATION  
To 10395 OLD PLACERVILLE ROAD  
SACRAMENTO, CA 95827  
Attention CAROL GULIZA-KONTONICKAS  
Phone SAC

Prepared Radian Analytical Services  
By 14046 Summit Dr., Bldg. B  
P. O. Box 201088  
Austin, TX 78720-1088  
512/244-0855  
CSC JALINDSEY

Client Code MCCLELLAN TCLP  
Client MCCLELLAN AFB  
Facility \_\_\_\_\_  
Work ID TCLP-8240  
Phone \_\_\_\_\_

Work Order # 9509403  
Page 1  
RCN 602-125-80-10

Prepared Radian Analytical Services  
By 14046 Summit Dr., Bldg. B  
P. O. Box 201088  
Austin, TX 78720-1088  
512/244-0855  
CSC JALINDSEY

Case # NA  
SDG # NA  
RAS # 50601AJAL

Project Sample ID/ Description	Lab Sample ID	Test Code(s)	Method Description
POLY-APN-015	01A TCZP 01B TCZP 02A TCZP	TCZPSA00 SPAREB00 TCZPSA00	TCLP Leaching, ZHE Spare sample TCLP Leaching, ZHE
TBLK			

10/03/95 16:41:44

**T C L P   B A T C H   S U M M A R Y**

Work Order # 9509403  
TCLP Batch # TCLP950928174500  
Page 2

Method TCLP Leaching, ZHE  
Test Code TCZPSA00

Extraction Start Date/Time 09/28/95 17:45:00  
Extraction Stop Date/Time 09/29/95 11:30:00

Analyst CMB  
Reviewer \_\_\_\_\_

Sample	Project Sample ID	Lab Sample ID	Weight (g)	Volume (mL)
1	POLY-APN-015	9509403-01A	20.09	400
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

Quality Control	Project Sample ID	Lab Sample ID	Weight (g)	Volume (mL)
Blank		TBLK953973	0	400

**APPENDIX B**

**Field Data Sheets**

Elastomeric Polymer Filter Media Treatability Study  
System Parameters Data Sheet Field Log

PAGE 1 OF 4

Date	Time	Sampler's Initials	Polymer Blower System Clock	FAN SVE System Chart	Inlet Parameters			Outlet Parameters			Sample Collected? ID
					Waste Stream	Air Dilution	Total	Pressure or Vacuum	Differential Pressure Vacuum	Temp F	
09/12	1440	CEK	NA	NC	A	37	φ	37 ~6 "	108 NC	~6 88	N
09/12	1445	CEK	NA	NC	A	37	φ	37 ~6	108 NC	~6 88	N
09/12	1450	CEK	NA	989.6	A	35	φ	35 5.5" Hg	108 NC	5.8" Hg 88	CEK
09/12	1510	CEK	NA	989.8	A	36	φ	36 5.8"	108 NC	6" 90	N
09/12	1555	CEK	NA	990.5	A	36	φ	36 5.5"	108 NC	6" 90	N
09/12	1615	CEK	NA	990.9	A	36	φ	36 5.8"	108 NC	6" 90	CEP2
09/13	1105	CHY	NA	NC	A	32	φ	32 NC	NC NC	6" 90	CEP3
09/13	1105	STOPPED	SISTEN	BLOWER							
09/13	1120	TURNED	ON	SYSTEM AND	A	14	φ	14 80	2" Hg	1" 75	N
09/13	1130	CEK	NA	1007.6	A	40	φ	40 6"	80 1" Hg	6" 75	N
09/13	1145	CEK	NA	1007.9	A	38	φ	38 6"	88 1" Hg	6" 75	N
09/13	1200	CEK	NA	1008.1	A	38	φ	38 6"	90 1" Hg	6" 78	CEP6
09/13	1240	CEK	NA	1008.7	A	38	φ	38 6"	94 1" Hg	6" 80	N
09/14	0920	CEK	NA	1029.4	A	36	φ	36 6"	64 5.5" Hg	6" 64	CEP7
09/15	1240	JWL	NC	NC	A	38	φ	38 5.5" Hg	NC 5.5" Hg	6" NC	CEP8
09/18	1610	CEK	NC	1132.2	A	37	φ	37 5.5	106 1" Hg	6" 104	CEP9

Vacuum expressed in inches of mercury

Pressure expressed in inches of water

If sample collected, indicate corresponding sample ID(s)

AT 1025 ON 09/18 REDUCED INFLOW BY HALF. CK

Elastomeric Polymer Filter Media Treatability Study  
System Parameters Data Sheet Field Log

PAGE 2 OF 4

Date	Time	Sampler's Initials	Blower System Clock	SVE System Chart	Canister ID	Inlet Parameters			Outlet Parameters			Sample Collected? ID
						Flow Rates	Waste Stream	Total Air	Pressure or Vacuum	Differential Pressure Vacuum	Temp F	
01/18/95	1625	CGK	NC	1132.6	A	12	φ	12	1	106	2" <sup>1</sup> Hg	104
01/19/95	0925	CGK	NC	1149.5	A	12	φ	12	2	86	1.4" <sup>1</sup> Hg	2
01/19/95	1500-1615	BLOWER WORKS) OFF DUE TO SYSTEM SYSTEM SHUT DOWN NC FILTERS THROUGH PUMPS										
01/20/95	0830	CGM	NC	—	A	12	φ	12	2.25	76	1.5" <sup>1</sup> Hg	76
01/20/95	0955	SAF	NC	—	A	12	φ	12	2.25	76	1.5" <sup>1</sup> Hg	80
01/21/95	0830	SAF	NC	—	A	12	φ	12	2.25	69	1.54" <sup>1</sup> Hg	71
01/21/95	0800	CGK	NC	—	A	12	φ	12	2.25	62	1.4" <sup>1</sup> Hg	68
01/21/95	0815	CGK	STOPPED TEST ON CANISTER A	NC	A	connected sample	to TCEP ANALYSIS	φ15				
01/22/95	0915	SAF	NC	NC	A	connected						

Vacuum expressed in inches of mercury

Pressure expressed in inches of water

If sample collected, indicate corresponding sample ID(s)

Elastomeric Polymer Filter Media Treatability Study  
System Parameters Data Sheet Field Log

PAGE 3 OF 4

Date	Time	Sampler's Initials	Polymer Blower System Clock	SVE System Chart	Canister ID	Inlet Parameters			Outlet Parameters			Sample Collected?
						Waste Stream	Dilution Air	Total	Pressure or Vacuum	Differential Pressure Vacuum or	Temp F	
09/24/95	0930	CEK	NC	NC	B	6	4	10	2.25	64	1" H <sub>2</sub> O	2
09/24/95	1000	CGK	NC	NC	B	6	4	10	2.25	70	1.2" H <sub>2</sub> O	2
09/24/95	1015	CGK	NC	NC	B	6	4	10	2.25	70	1.2" H <sub>2</sub> O	2
09/25/95	0805	SAF	NC	NC	B	6	4	10	2.5	62	1.2" H <sub>2</sub> O	2
09/25/95	0840	CGK	NC	NC	B	8	4	12	2.5	64	1.2" H <sub>2</sub> O	2
09/26/95	1600	SAF	NC	NC	B	6	4	10	2.25"	86	1.2" H <sub>2</sub> O	2" H <sub>2</sub>
09/27/95	1000	SAF	NC	NC	B	4	6	10	2.25" H <sub>2</sub>	80	1.2" H <sub>2</sub>	2" H <sub>2</sub>
09/28/95	0905	CEK	NC	NC	B	4	6	10	2.5"	70	1.2" H <sub>2</sub> O	2
09/29/95	0810	CEK	NC	NC	B	5	6	11	2.5"	NC	1.0" H <sub>2</sub> O	NC
09/29/95	0830	CGK	SHUT OFF	FLOW TO CISTERNE	TO CHANGE OUT POLYMER IN	A.						

Vacuum expressed in inches of mercury

Pressure expressed in inches of water

If sample collected, indicate corresponding sample ID(s)



**APPENDIX C**

**Quality Assurance Data Assessment**

## **POLYMER FILTER MEDIA QUALITY ASSURANCE/QUALITY CONTROL RESULTS**

This section presents the results of the Quality Assurance/Quality Control (QA/QC) data assessment for 29 air samples analyzed by TO-14, and 14 air samples analyzed by Method 18 modified. The samples were analyzed by Air Toxics Ltd. (Folsom, California). Toxicity Characteristic Leaching Procedure (Method SW1311) was performed on one solid sample of filter media, and the leachate was analyzed by Method SW8260. This sample was analyzed by Radian Analytical Services (Austin, Texas). Quality control (QC) samples collected to assess contamination, precision and accuracy for the data set are presented in the following order: blanks (reagent); spikes (method, matrix and surrogate); duplicates (lab, matrix spike and field).

Overall, the QC sample results indicate good accuracy and precision for the sampling and analysis procedures. No reagent blank contamination was indicated. All of the method spikes (with the exception of 5), matrix spikes (with one exception), and surrogate spike recoveries and all of the Relative Percent Differences (RPDs) for matrix spike duplicate, lab control duplicate samples, and field duplicates met established data quality objectives.

### **Reagent Blanks**

Reagent blanks are used to demonstrate that interferences or contamination from the analytical system, including glassware and reagents used in the analytical procedure, are under laboratory control. No target analytes were detected, indicating that the analytical system was free of contamination and no sample results are affected.

### **Method Spikes**

Method spikes, also known as laboratory control samples (LCS), are a solution of method analytes at known concentrations that are spiked into ultra high purity compressed air or reagent grade water (depending on sample matrix) and analyzed to assess the accuracy of the method. The results are reported as the percent recovery of each spiked compound. Four out of seven method spike recoveries for vinyl chloride had slightly high recoveries. Seven project sample results for vinyl chloride were qualified as "J+" estimated potentially biased high. One out of seven method spike recoveries had slightly low recoveries for o-xylene. Two project sample results for o-xylene were qualified as "J-" estimated potentially biased low.

### **Matrix Spikes**

A matrix spike is a solution of method analytes at known concentrations that are spiked into a field sample. The results of the analysis of the spiked sample are then reported as a percent

recovery of each spiked compound. This percent recovery is used to assess bias caused by matrix interference. Two matrix spike samples (one pair) were analyzed by Method SW8260, and all recoveries (with the exception of trichlorethene) were within acceptable limits, indicating good overall accuracy. One matrix spike sample had slightly high recovery for trichloroethene and the TCLP extract sample was flagged "J+" estimated potentially biased high.

### **Surrogate Spikes**

Surrogates were added to every sample, blank, and method spike to monitor both the performance of the analytical system and the effectiveness of the method in recovering the compounds of interest for each sample matrix. The percent recovery of the surrogate spike compounds were compared to the recovery objectives established for the method. All surrogate spike results met acceptable limits, indicating that there were no problems associated with recovering target analytes using these methods.

### **Duplicates**

#### **Laboratory Duplicates**

Laboratory duplicates are repeated, independent analyses of the same sample, by the same analyst, at essentially the same time and under the same conditions. The sample is split in the laboratory, and each fraction is carried through all stages of sample preparation and analysis. Duplicate analyses are used to assess the precision of each analytical method. Sample POLY-CIN-024 had a laboratory duplicate performed. Eight pairs of results RPD's were all less than 16%, which is within acceptable limits for precision and indicates good overall reproducibility.

#### **Matrix Spike/Matrix Spike Duplicates**

A matrix spike/matrix spike duplicate (MS/MSD) is used to assess precision of the method for the specific sample matrix. One MS/MSD pair was analyzed by Method SW8260. The RPD's were all less than 11 percent, which is within acceptable limits for precision, and indicates good overall reproducibility.

#### **Field Duplicates**

Field duplicate samples are used to evaluate the precision of the total measurement system and estimate variability in the entire sampling and analytical process. The sample identified as POLY-AEX-006 was a field duplicate of sample POLY-AEN-005. Analysis of this sample by method TO-14 and Method 18 modified yielded five analyte pairs for which RPD's could be

calculated. All the calculated RPD's met the data quality objectives, indicating good precision and reproducibility.

### Holding Times

Method protocol specifies the maximum amount of time a sample can be stored before analysis (i.e., the sample "holding time"). All samples were analyzed within the required holding times from sample collection to analysis.

### Calibration Ranges

Ten samples for trichloroethene by Method TO-14 exceeded the instrument calibration range, but were within linear range. These results were "J+" flagged estimated potentially biased high.

TABLE 1. Qualified Data

METHOD	ANALYTE	REASON	QUAL FLAG	SAMPLE ID	
TO-14	Trichloroethene	Calibration range exceeded, within linear range.	J+	POLY-VW-315-001 POLY-AIN-002 POLY-AEN-007 POLY-AIN-090 POLY-AEN-012	POLY-BIN-016 POLY-BIN-018 POLY-BEN-021 POLY-CIN-024 POLY-CEN-025
TO-14	Vinyl chloride	Method spike had a high recovery.	J+	POLY-AIN-002 POLY-AEN-003 POLY-AEN-007	POLY-AIN-090 POLY-BIN-020 POLY-AEN-012
TO-14	o-Xylene	Method spike had a low recovery.	J-	POLY-AIN-013	POLY-AEN-014
SW8260	Trichloroethene	Matrix spike had high recovery.	J+	POLY-APN-015	

## POLYMER FILTER MEDIA RESULTS

					Sample name:		
					DC:		
					DA:		
9509057A-01A							
TO-14	result (ppbv)	dilution (ppbv)	dilution factor	TO-14 result (ppbv)	TO-14 result (ppbv)	dilution (ppbv)	dilution factor
Vinyl chloride	ND	1100	2200	Vinyl chloride	Vinyl chloride		
1,1-Dichloroethene	ND	1100	2200	1,1-Dichloroethene			
Freon 113	ND	1100	2200	Freon 113			
cis-1,2-Dichloroethene	26,000	1100	2200	cis-1,2-Dichloroethene			
Chloroform	2,600	1100	2200	Chloroform			
1,1,1-Trichloroethane	ND	1100	2200	1,1,1-Trichloroethane			
Benzene	5,000	1100	2200	Benzene			
Trichloroethene	1,200,000E* J+	1100	2200	Trichloroethene			
Toluene	1,900	1100	2200	Toluene			
Tetrachloroethene	ND	1100	2200	Tetrachloroethene			
m,p-Xylene	7,500	1100	2200	m,p-Xylene			
o-Xylene	6,900	1100	2200	o-Xylene			
Acetone	ND	4400	2200	Acetone			
9509507B							
Modified Method 18				Modified Method 18			
Vinyl chloride	110	3100	2.2	Vinyl chloride			

\* TCE exceeds calibration range, but within linear range  
 flag J+ estimated biased high

POLYMER FILTER MEDIA RESULTS

Sample name:POLY-AEN-003					
DC:9/12/95					
DA:9/13/95					
9509097A-02A					
TO-14	result	dilution	TO-14	result	dilution
Vinyl chloride	(ppbv)	(ppbv)	Vinyl chloride	(ppbv)	(ppbv)
1,1-Dichloroethene	ND	1,600	3,200	1,1-Dichloroethene	390
Freon 113	ND	1,600	3,200	Freon 113	ND
cis-1,2-Dichloroethene	19,000	1,600	3,200	cis-1,2-Dichloroethene	3,500
Chloroform	2,200	1,600	3,200	Chloroform	700
1,1,1-Trichloroethane	ND	1,600	3,200	1,1,1-Trichloroethane	ND
Benzene	4,300	1,600	3,200	Benzene	ND
Trichloroethene	660,000E* J+	1,600	3,200	Trichloroethene	71,000
Toluene	1,800	1,600	3,200	Toluene	ND
Tetrachloroethene	ND	1,600	3,200	Tetrachloroethene	ND
m,p-Xylene	6,900	1,600	3,200	m,p-Xylene	ND
o-Xylene	5,300	1,600	3,200	o-Xylene	ND
Acetone	ND	6,400	3,200	Acetone	ND
Modified Method 18					
9509097B-01A				Modified Method 18	
Vinyl chloride	3,700	130	2.6	9509097B-02A	
				Vinyl chloride	4,000
					130
					2.6

\* TCE exceeds calibration range, but within linear range  
flag J+ estimated biased high

\*\* Vinyl chloride method spike recovery out high 138%  
Flag vinyl chloride J+ estimated potential high bias.

POLYMER FILTER MEDIA RESULTS

Sample name:POLY-AEN-005					
DC:9/13/95		Sample name:POLY-AEN-005			
DA:9/14/95		DC:9/13/95			
9509107A-01A		DA:9/14/95			
		9509107A-02A			
TO-14	result (ppbv)	dilution factor	TO-14 (ppbv)	result (ppbv)	dilution factor
Vinyl chloride	ND	2,500	4,900	Vinyl chloride	ND
1,1-Dichloroethene	ND	2,500	4,900	1,1-Dichloroethene	ND
Freon 113	ND	2,500	4,900	Freon 113	ND
cis-1,2-Dichloroethene	23,000	2,500	4,900	cis-1,2-Dichloroethene	12,000
Chloroform	2,700	2,500	4,900	Chloroform	1,300
1,1,1-Trichloroethane	ND	2,500	4,900	1,1,1-Trichloroethane	ND
Benzene	4,700	2,500	4,900	Benzene	1,900
Trichloroethene	780,000	2,500	4,900	Trichloroethene	340,000
Toluene	ND	2,500	4,900	Toluene	ND
Tetrachloroethene	ND	2,500	4,900	Tetrachloroethene	ND
m,p-Xylene	7,900	2,500	4,900	m,p-Xylene	ND
o-Xylene	6,400	2,500	4,900	o-Xylene	ND
Acetone	ND	9,800	4,900	Acetone	ND
Modified Method 18					
9509107B-01A			9509107B-02A		
Vinyl chloride	2,800	250	5	Vinyl chloride	1,200
					130
					2.5

POLYMER FILTER MEDIA RESULTS

FIELD DUPLICATE					
Sample name:POLY-AEX-006					
DC:9/13/95					
DA:9/14/95					
9509107A-02A					
TO-14					
result	dl	dilution	TO-14	result	dl
(ppbv)	(ppbv)	factor	[RPD]	(ppbv)	(ppbv)
Vinyl chloride	ND	1,300	2,500	Vinyl chloride	ND
1,1-Dichloroethene	ND	1,300	2,500	1,1-Dichloroethene	ND
Freon 113	ND	1,300	2,500	Freon 113	ND
cis-1,2-Dichloroethene	12,000	1,300	2,500 [45.2]	cis-1,2-Dichloroethene	19,000
Chloroform	1,300	1,300	2,500 [42.4]	Chloroform	2,000
1,1,1-Trichloroethane	ND	1,300	2,500	1,1,1-Trichloroethane	ND
Benzene	1,900	1,300	2,500 [51.0 OK]	Benzene	3,200
Trichloroethene	340,000	1,300	2,500 [45.5]	Trichloroethene	540,000
Toluene	ND	1,300	2,500	Toluene	ND
Tetrachloroethene	ND	1,300	2,500	Tetrachloroethene	ND
m,p-Xylene	ND	1,300	2,500	m,p-Xylene	ND
o-Xylene	ND	1,300	2,500	o-Xylene	ND
Acetone	ND	5,000	2,500	Acetone	ND
Modified Method 18					
9509107B-02A				9509107B-03A	
Vinyl chloride	1,200	130	2.5 [45.2]	Vinyl chloride	1,900
				130	2.5

POLYMER FILTER MEDIA RESULTS

Sample name:POLY-AEN-008					
DC:9/14/95		Sample name:POLY-AEN-008	DC:9/15/95		
DA:9/14/95			DA:9/16/95		
9509107A-04A			9509134A-01A		
TO-14	result	dilution	TO-14	result	dilution
Vinyl chloride	(ppbv)	(ppbv)	Vinyl chloride	(ppbv)	(ppbv)
2000** J+	1,800	3,500	1,1-Dichloroethene	ND	3,800
1,1-Dichloroethene	ND	1,800	3,500	ND	3,800
Freon 113	ND	1,800	3,500	ND	3,800
cis-1,2-Dichloroethene	26,000	1,800	3,500	Freon 113	ND
Chloroform	2,900	1,800	3,500	cis-1,2-Dichloroethene	18,000
1,1,1-Trichloroethane	ND	1,800	3,500	Chloroform	1,900
Benzene	5,200	1,800	3,500	1,1,1-Trichloroethane	ND
Trichloroethene	900,000E** J+	1,800	3,500	Benzene	1,900
Toluene	ND	1,800	3,500	Trichloroethene	4,000
Tetrachloroethene	ND	1,800	3,500	Toluene	670,000
m,p-Xylene	ND	1,800	3,500	Tetrachloroethene	1,900
o-Xylene	ND	1,800	3,500	m,p-Xylene	1,900
Acetone	ND	7,000	3,500	o-Xylene	5,500
				Acetone	ND
					7,600
					3,800
Modified Method 18					
9509107B-04A			9509134B-01A		
Vinyl chloride	2,600	130	Vinyl chloride	3,200	130
					2.5

\* TCE exceeds calibration range, but within linear range  
flag J+ estimated biased high

\*\* Vinyl chloride method spike recovery out high 132%  
Flag vinyl chloride J+ estimated potential high bias.

POLYMER FILTER MEDIA RESULTS

Sample name: POLY-AEN-090						Sample name: POLY-AEN-010							
DC: 9/18/95			DC: 9/18/95			DA: 9/19/95			DA: 9/19/95				
9509168A-01A						9509168A-02A							
TO-14	result (ppbv)	dilution factor	TO-14	result (ppbv)	dilution factor	TO-14	result (ppbv)	dilution factor	TO-14	result (ppbv)	dilution factor		
Vinyl chloride	2600 J+	1,700	3,400	Vinyl chloride	1,1-Dichloroethene	1,1-Dichloroethene	ND	2,700	5,400	ND	2,700	5,400	
1,1-Dichloroethene	ND	1,700	3,400	Freon 113	cis-1,2-Dichloroethene	cis-1,2-Dichloroethene	ND	2,700	5,400	ND	2,700	5,400	
Freon 113	ND	1,700	3,400	Chloroform	Chloroform	Chloroform	ND	2,700	5,400	ND	2,700	5,400	
cis-1,2-Dichloroethene	21,000	1,700	3,400	1,1,1-Trichloroethane	1,1,1-Trichloroethane	1,1,1-Trichloroethane	ND	2,700	5,400	3,500	2,700	5,400	
Chloroform	2,300	1,700	3,400	Benzene	Benzene	Benzene	ND	2,700	5,400	650,000	2,700	5,400	
1,1,1-Trichloroethane	ND	1,700	3,400	Trichloroethene	Trichloroethene	Trichloroethene	ND	2,700	5,400	Toluene	ND	2,700	5,400
Benzene	3,400	1,700	3,400	Tetrachloroethene	Tetrachloroethene	Tetrachloroethene	ND	2,700	5,400	m,p-Xylene	14,000	2,700	5,400
Trichloroethene	760,000 E-14	1,700	3,400	o-Xylene	o-Xylene	o-Xylene	14,000	2,700	5,400	Acetone	ND	11,000	5,400
Toluene	ND	1,700	3,400										
Tetrachloroethene	ND	1,700	3,400										
m,p-Xylene	8,700	1,700	3,400										
o-Xylene	7,500	1,700	3,400										
Acetone	11,000	6,800	3,400										
Modified Method 18						Modified Method 18							
Vinyl chloride						9509168B-02A	Vinyl chloride	3,000	50	2.7			

\* TCE exceeds calibration range, but within linear range  
flag J+ estimated biased high

\*\* Vinyl chloride method spike recovery out high 142%  
Flag vinyl chloride J+ estimated potential high bias.

POLYMER FILTER MEDIA RESULTS

Sample name: POLY-AIN-011						Sample name: POLY-AEN-012					
DC: 9/19/95			DC: 9/19/95			DA: 9/20/95			DA: 9/20/95		
9509168A-03A			9509168A-04A								
TO-14	result	dl	dilution	TO-14	result	TO-14	dl	dilution	TO-14	dl	dilution
	(ppbv)	(ppbv)	factor		(ppbv)		(ppbv)	(ppbv)		(ppbv)	factor
Vinyl chloride	3100** J+	2,300	4,500	Vinyl chloride	1900** J+		1,500	3,000		1,500	3,000
1,1-Dichloroethene	ND	2,300	4,500	1,1-Dichloroethene	ND		ND	3,000		ND	3,000
Freon 113	ND	2,300	4,500	Freon 113	ND		ND	3,000		ND	3,000
cis-1,2-Dichloroethene	20,000	2,300	4,500	cis-1,2-Dichloroethene	22,000		1,500	3,000		2,600	1,500
Chloroform	2,300	2,300	4,500	Chloroform			2,600	1,500		ND	3,000
1,1,1-Trichloroethane	ND	2,300	4,500	1,1,1-Trichloroethane	ND		ND	3,000		ND	3,000
Benzene	3,800	2,300	4,500	Benzene	3,600		1,500	3,000		ND	3,000
Trichloroethene	660,000	2,300	4,500	Trichloroethene	730,000** J+		1,500	3,000		ND	3,000
Toluene	ND	2,300	4,500	Toluene	ND		ND	3,000		ND	3,000
Tetrachloroethene	ND	2,300	4,500	Tetrachloroethene	ND		ND	3,000		ND	3,000
m,p-Xylene	9,300	2,300	4,500	m,p-Xylene	4,000		1,500	3,000		ND	3,000
o-Xylene	7,200	2,300	4,500	o-Xylene	4,200		1,500	3,000		ND	3,000
Acetone	ND	9,000	4,500	Acetone	ND		6,000	3,000		ND	3,000
Modified Method 18						Modified Method 18					
Vinyl chloride				Vinyl chloride							

\* TCE exceeds calibration range, but within linear range  
flag J+ estimated biased high

\*\* Vinyl chloride method spike recovery out high 142%  
Flag vinyl chloride J+ estimated potential high bias.

## POLYMER FILTER MEDIA RESULTS

POLYMER FILTER MEDIA RESULTS

Sample name: POLY-BEN-016						Sample name: POLY-BEN-017					
DC:9/22/95			DC:9/22/95			DA:9/25/95			DA:9/25/95		
DA:9/25/95			9509209A-02A								
TO-14	result (ppbv)	dilution factor	TO-14	result (ppbv)	dilution factor	TO-14	result (ppbv)	dilution factor	TO-14	result (ppbv)	dilution factor
Vinyl chloride	ND	700	1,400	Vinyl chloride	640	4.3	8.6	8.6			
1,1-Dichloroethene	ND	700	1,400	1,1-Dichloroethene	19	4.3	8.6	8.6			
Freon 113	ND	700	1,400	Freon 113	51	4.3	8.6	8.6			
cis-1,2-Dichloroethene	12,000	700	1,400	cis-1,2-Dichloroethene	13	4.3	8.6	8.6			
Chloroform	1,000	700	1,400	Chloroform	ND	4.3	8.6	8.6			
1,1,1-Trichloroethane	ND	700	1,400	1,1,1-Trichloroethane	15	4.3	8.6	8.6			
Benzene	2,000	700	1,400	Benzene	ND	4.3	8.6	8.6			
Trichloroethene	390,000E* J+	700	1,400	Trichloroethene	560	4.3	8.6	8.6			
Toluene	ND	700	1,400	Toluene	ND	4.3	8.6	8.6			
Tetrachloroethene	ND	700	1,400	Tetrachloroethene	ND	4.3	8.6	8.6			
m,p-Xylene	3,900	700	1,400	m,p-Xylene	4	4.3	8.6	8.6			
o-Xylene	3,300	700	1,400	o-Xylene	ND	4.3	8.6	8.6			
Acetone	ND	2,800	1,400	Acetone	ND	17.0	8.6	8.6			
<b>Modified Method 18</b>											
9509209B-01A											
Vinyl chloride	1,600	110	2.2	Vinyl chloride							

\* TCE exceeds calibration range, but within linear range  
flag J+ estimated biased high

POLYMER FILTER MEDIA RESULTS

## POLYMER FILTER MEDIA RESULTS

## POLYMER FILTER MEDIA RESULTS

## POLYMER FILTER MEDIA RESULTS

Sample name:POLY-CIN-024						Sample name:POLY-CEN-025					
DC:9/29/95			DC:9/29/95								
DA:10/2/95			DA:10/2/95								
9509314A-03A			9509314A-04A								
TO-14	result	dilution	TO-14	result	dilution	TO-14	result	dilution	TO-14	result	dilution
	(ppbv)	(ppbv)		(ppbv)	(ppbv)		(ppbv)	(ppbv)		(ppbv)	(ppbv)
Vinyl chloride	2,200	1,100	2,200	Vinyl chloride	2,500	1,400	Vinyl chloride	2,500	1,400	Vinyl chloride	2,800
1,1-Dichloroethene	ND	1,100	2,200	1,1-Dichloroethene	ND	1,400	1,1-Dichloroethene	ND	1,400	1,1-Dichloroethene	2,800
Freon 113	ND	1,100	2,200	Freon 113	ND	1,400	Freon 113	ND	1,400	Freon 113	2,800
cis-1,2-Dichloroethene	23,000	1,100	2,200	cis-1,2-Dichloroethene	26,000	1,400	cis-1,2-Dichloroethene	26,000	1,400	cis-1,2-Dichloroethene	2,800
Chloroform	2,200	1,100	2,200	Chloroform	2,500	1,400	Chloroform	2,500	1,400	Chloroform	2,800
1,1,1-Trichloroethane	ND	1,100	2,200	1,1,1-Trichloroethane	ND	1,400	1,1,1-Trichloroethane	ND	1,400	1,1,1-Trichloroethane	2,800
Benzene	2,800	1,100	2,200	Benzene	3,500	1,400	Benzene	3,500	1,400	Benzene	2,800
Trichloroethene	640,000E* J+	1,100	2,200	Trichloroethene	690,000E* J	1,400	Trichloroethene	690,000E* J	1,400	Trichloroethene	2,800
Toluene	1,600	1,100	2,200	Toluene	ND	1,400	Toluene	ND	1,400	Toluene	2,800
Tetrachloroethene	ND	1,100	2,200	Tetrachloroethene	ND	1,400	Tetrachloroethene	ND	1,400	Tetrachloroethene	2,800
m,p-Xylene	7,200	1,100	2,200	m,p-Xylene	ND	1,400	m,p-Xylene	ND	1,400	m,p-Xylene	2,800
o-Xylene	6,300	1,100	2,200	o-Xylene	ND	1,400	o-Xylene	ND	1,400	o-Xylene	2,800
Acetone	ND	4,400	2,200	Acetone	ND	5,600	Acetone	ND	5,600	Acetone	2,800
Modified Method 18			Modified Method 18			Modified Method 18			Modified Method 18		
Vinyl chloride			Vinyl chloride			Vinyl chloride			Vinyl chloride		

\* TCE exceeds calibration range, but within linear range  
flag J+ estimated biased high

POLYMER FILTER MEDIA RESULTS

LAB DUPLICATE					
Sample name:POLY-CIN-024					
DC:9/29/95					
DA:10/2/95					
9509314A-03A					
TO-14					
result	dilution	TO-14	result	dilution	dilution
(ppbv)	(ppbv)	RPD	(ppbv)	(ppbv)	factor
Vinyl chloride	2,200	1,100	2,200	9.5	Vinyl chloride
1,1-Dichloroethene	ND	1,100	2,200		1,1-Dichloroethene
Freon 113	ND	1,100	2,200		Freon 113
cis-1,2-Dichloroethene	23,000	1,100	2,200	4.4	cis-1,2-Dichloroethene
Chloroform	2,200	1,100	2,200	4.7	Chloroform
1,1,1-Trichloroethane	ND	1,100	2,200		1,1,1-Trichloroethane
Benzene	2,800	1,100	2,200	15.4	Benzene
Trichloroethene	640,000E- J+	1,100	2,200	6.5	Trichloroethene
Toluene	1,600	1,100	2,200	6.6	Toluene
Tetrachloroethene	ND	1,100	2,200		Tetrachloroethene
m,p-Xylene	7,200	1,100	2,200	1.4	m,p-Xylene
o-Xylene	6,300	1,100	2,200	0	o-Xylene
Acetone	ND	4,400	2,200		Acetone
Modified Method 18					
Vinyl chloride			Vinyl chloride		

\* TCE exceeds calibration range, but within linear range  
flag J+ estimated biased high

POLYMER FILTER MEDIA RESULTS

Sample name:POLY-CIN-026				Sample name:POLY-CEN-027			
DC:9/0/95				DC:9/30/95			
DA:10/3/95				DA:10/3/95			
9510006A-01A				9510006A-02A			
TO-14	result (ppbv)	dilution factor	TO-14	result (ppbv)	dilution factor	TO-14	dilution factor
Vinyl chloride	2,400	1,400	2,700	Vinyl chloride	1,600	1,400	2,800
1,1-Dichloroethene	ND	1,400	2,700	1,1-Dichloroethene	ND	1,400	2,800
Freon 113	ND	1,400	2,700	Freon 113	ND	1,400	2,800
cis-1,2-Dichloroethene	25,000	1,400	2,700	cis-1,2-Dichloroethene	24,000	1,400	2,800
Chloroform	2,500	1,400	2,700	Chloroform	2,500	1,400	2,800
1,1,1-Trichloroethane	ND	1,400	2,700	1,1,1-Trichloroethane	ND	1,400	2,800
Benzene	3,300	1,400	2,700	Benzene	2,600	1,400	2,800
Trichloroethene	720,000	1,400	2,700	Trichloroethene	690,000	1,400	2,800
Toluene	2,200	1,400	2,700	Toluene	2,100	1,400	2,800
Tetrachloroethene	ND	1,400	2,700	Tetrachloroethene	ND	1,400	2,800
m,p-Xylene	9,500	1,400	2,700	m,p-Xylene	19,000	1,400	2,800
o-Xylene	8,200	1,400	2,700	o-Xylene	22,000	1,400	2,800
Acetone	ND	5,400	2,700	Acetone	ND	5,600	2,800
<b>Modified Method 18</b>				<b>Modified Method 18</b>			
Vinyl chloride				Vinyl chloride			

POLYMER FILTER MEDIA RESULTS

Sample name:POLY-CIN-028						Sample name:POLY-CEN-029					
DC:10/2/95			DC:10/2/95			DA:10/3/95			DA:10/3/95		
9510006A-03A						9510006A-04A					
TO-14	result (ppbv)	dilution factor	TO-14	result (ppbv)	dilution factor	TO-14	result (ppbv)	dilution factor	TO-14	result (ppbv)	dilution factor
Vinyl chloride	2,000	1,400	2,700	Vinyl chloride	2,100	1,400	2,700	1,400	ND	1,400	2,700
1,1-Dichloroethene	ND	1,400	2,700	1,1-Dichloroethene	ND	1,400	2,700	1,400	ND	1,400	2,700
Freon 113	ND	1,400	2,700	Freon 113	ND	1,400	2,700	1,400	ND	1,400	2,700
cis-1,2-Dichloroethene	25,000	1,400	2,700	cis-1,2-Dichloroethene	27,000	1,400	2,700	2,500	1,400	1,400	2,700
Chloroform	2,400	1,400	2,700	Chloroform	ND	1,400	2,700	3,700	1,400	1,400	2,700
1,1,1-Trichloroethane	ND	1,400	2,700	1,1,1-Trichloroethane	ND	1,400	2,700	720,000	1,400	1,400	2,700
Benzene	2,700	1,400	2,700	Benzene	ND	1,400	2,700	1,900	1,400	1,400	2,700
Trichloroethene	660,000	1,400	2,700	Trichloroethene	ND	1,400	2,700	5,400	1,400	1,400	2,700
Toluene	1,600	1,400	2,700	Toluene	ND	1,400	2,700	3,800	1,400	1,400	2,700
Tetrachloroethene	ND	1,400	2,700	Tetrachloroethene	ND	1,400	2,700	ND	1,400	1,400	2,700
m,p-Xylene	9,600	1,400	2,700	m,p-Xylene	ND	1,400	2,700	5,400	1,400	1,400	2,700
o-Xylene	7,200	1,400	2,700	o-Xylene	ND	1,400	2,700	3,800	1,400	1,400	2,700
Acetone	ND	5,400	2,700	Acetone	ND	5,400	2,700	ND	5,400	5,400	2,700
Modified Method 18						Modified Method 18					
Vinyl chloride						Vinyl chloride					

POLYMER FILTER MEDIA RESULTS

Sample name: POLY-CIN-031				Sample name: POLY-CEN-031			
		DC:10/4/95	DC:10/4/95			DA:10/5/95	DA:10/5/95
		9510034A-01A				9510034A-02A	
TO-14	result	dilution	TO-14	result	dilution	TO-14	dilution
	(ppbv)	(ppbv)	factor	(ppbv)	(ppbv)	(ppbv)	factor
Vinyl chloride	ND	1,100	2,220	Vinyl chloride	ND	2,200	4,300
1,1-Dichloroethene	ND	1,100	2,220	1,1-Dichloroethene	ND	2,200	4,300
Freon 113	ND	1,100	2,220	Freon 113	ND	2,200	4,300
cis-1,2-Dichloroethene	13,000	1,100	2,220	cis-1,2-Dichloroethene	24,000	2,200	4,300
Chloroform	1,300	1,100	2,220	Chloroform	2,200	2,200	4,300
1,1,1-Trichloroethane	ND	1,100	2,220	1,1,1-Trichloroethane	ND	2,200	4,300
Benzene	1,700	1,100	2,220	Benzene	3,100	2,200	4,300
Trichloroethene	350,000	1,100	2,220	Trichloroethene	750,000	2,200	4,300
Toluene	ND	1,100	2,220	Toluene	ND	2,200	4,300
Tetrachloroethene	ND	1,100	2,220	Tetrachloroethene	ND	2,200	4,300
m,p-Xylene	4,400	1,100	2,220	m,p-Xylene	6,300	2,200	4,300
o-Xylene	3,300	1,100	2,220	o-Xylene	4,400	2,200	4,300
Acetone	ND	4,400	2,220	Acetone	ND	8,600	4,300
Modified Method 18							
9510034B-01A				9510034B-02A			
Vinyl chloride	1,200	220	4.4	RPD	Vinyl chloride	3,200	110
( field duplicate )	970	220	4.4	22%			2.1

## POLYMER FILTER MEDIA RESULTS

Sample name: POLY-APN-015				Sample name: POLY-APN-015			
DC:9/22/95				DC:9/22/95			
Leachate date:9/29/95				Leachate date:9/29/95			
DA:10/9/95				DA:10/9/95			
9510034A-01A				9510034A-01A			
SW8260				SW8260			
result		dilution		result		dl	dilution
(ug/L)		(ug/L)		(ug/L)		(ug/L)	factor
Benzene	ND	503	1,000	Benzene	60	50.3	100
2-Butanone (MEK)	ND	2,320	1,000	2-Butanone (MEK)	ND	232.0	100
Carbon Tetrachloride	ND	566	1,000	Carbon Tetrachloride	ND	56.6	100
Chlorobezene	ND	591	1,000	Chlorobezene	ND	59.1	100
Chloroform	ND	678	1,000	Chloroform	ND	67.8	100
1,2-Dichloroethane	5,830	791	1,000	1,2-Dichloroethane	6,550	79.1	100
1,1-Dichloroethene	ND	802	1,000	1,1-Dichloroethene	ND	80.2	100
Tetrachloroethene	ND	674	1,000	Tetrachloroethene	ND	67.4	100
Trichloroethene	15,600	438	1,000	Trichloroethene	14,900**	43.8	100
Vinyl chloride	ND	738	1,000	Vinyl chloride	ND	73.8	100

## **APPENDIX D**

**Advanced Water Systems PetroLOK™ PL22 Product Information**



14207 NE 193rd Place      Woodinville, WA 98072  
Phone: 206/485-0670      Fax: 206/486-4983

**INTRODUCTION**

**To**

**PetroLOK™ PL 22**

## INTRODUCTION

A new water filtration media revolutionizes the removal of petroleum hydrocarbons and other volatile organic compounds (VOC's) from waste streams.

Analytical data on the performance of this new media called **PetroLOK™ PL22** indicate the product is superior to granular activated carbon (GAC) for many applications, and that PL22 represents a new "best available technology" for the removal of hydrocarbons from water.

The PL22 filtration media is a unique blend of proprietary polymers and virgin activated carbon designed to capture remaining hydrocarbons and VOC's after removal of free hydrocarbon product. The filtration media's unique properties lowers treatment costs and drastically reduces retention times.

Unlike activated carbon which removes contaminants through adsorption, the proprietary polymer in PetroLOK™ PL22 absorbs and bonds contaminants. The polymer is capable of absorbing 10-15 times its weight of hydrocarbon. The proprietary blend can absorb and bond up to 4 times its own weight in contaminants. As a result, although the pound-per-pound cost of PL22 media is higher than GAC, analyses show that 14 to 20 times less of the PL22 is required to treat the same amount of water.

Another major benefit provided by PetroLOK™ PL22 filtration media is the speed with which it removes hydrocarbons and VOC's from water. Analyses conducted on waste water containing levels of total hydrocarbons and VOC's ranging from 10,000 PPM to 1 PPB show that the PL22 media removes most hydrocarbons and VOC's within the first three minutes of exposure to the media. Additional contaminant removal occurs as retention times increase. Analyses of effluent from activated carbon indicate that an average retention time of 15 to 25 minutes is required to achieve similar levels of contaminant removal.

## BACKGROUND

Water is essential to every living thing. Two-thirds of the human body is water. Three-fourths of the earth is covered by water, but only 3% of this water is fresh (non-salty). Two-thirds of this water is locked into the polar ice caps and not currently available for consumption. This leaves less than 1% for human and industrial uses.

Total daily water consumption in the U.S. is approximately 500 billion gallons. Industry uses approximately 43% of this total. It takes nearly 60,000 gallons to produce one ton of steel and almost 70,000 gallons to produce one ton of paper. Agricultural use of water accounts for 47% of the total. The usage quickly adds up when one realizes it takes 115 gallons of water to grow the wheat for one loaf of bread, 2,000 gallons to produce a pound of beef, and an amazing 120 gallons to produce a single egg.

The remaining 10% (50 billion gallons) is for personal use. This figure represents approximately 100 gallons per person per day used for gardening and cleaning. Only 2 to 3 quarts per person per day is actually used for drinking and cooking. The average family of four requires only 2 to 3 gallons of drinkable water per day.

## **Nature's Water Cycle**

Pure water is vital to our future. Fresh pure water evaporating from the oceans begins the earth's cycle. This pure water vapor passes over land, interacts with air currents and temperature variations, and eventually falls to the earth as precipitation in the form of rain or snow.

As the rain and melting snow run across the surface of the land, debris, chemicals, pesticides, and hydrocarbons are carried along, making their way back to the oceans by way of streams, lakes and rivers. Water which soaks into the ground becomes part of the vast underground "sea" which dissolves rocks and decomposes organics. These underground waters are known as aquifers, and they, too, move to the oceans. Some aquifers move five to ten feet per year, and others move more than five miles per year.

Eventually all the water that falls as rain or snow makes its way back to the oceans carrying silt, dirt, debris, and millions of tons of waste accumulated through this process.

## **THE PROBLEM**

Is enough pure water available today and in the future? Over 700 organic chemicals have been identified in various public water supplies; many are carcinogenic, many others are suspect. Most contaminants are man-made. In 1985, American industry produced over 250 million tons of hazardous waste or approximately one ton for every American. By 1993, this had grown to over 500 million tons. At that time only about 10% of all this hazardous waste was properly disposed of. The remaining 90% was burned, dumped, improperly burned, or simply poured into water disposal systems. Since then, improper disposal has been significantly reduced, but it is still a major concern.

Over the years, a significant portion of polluted waste water is contaminated by petroleum products and by-products. The illegal discharge of petroleum products (hydrocarbons) has become the big issue of today. Tighter controls have been written and enforcement is stricter. Marine discharge, leaking fuel tanks, industrial discharge, storm water run-off, pipelines and accidental spills are now closely monitored for compliance. Companies are scrambling to find economic ways to clean water, air, and soil before discharge to meet the tighter controls and avoid citations and/or fines. What can be done?

## **EXISTING TECHNOLOGY**

The most common method for attempting to remove floating, dissolved and emulsified hydrocarbons from water is by filtering the water through granular activated carbon (GAC). Other technologies include air stripping (introduce air into water stream), ultra filtration (still often uses activated carbon as final polisher), and bio-remediation (temperature-sensitive and generally slow).

When carbon granules are burned under controlled conditions, a high purity carbon surface with a micropore structure results. Such "activated" carbons have a surface area of over 10,000 square feet per gram (over 120 acres per pound). This high purity, non-polar surface with many micropores and capillaries removes organic materials by a process of adsorption (a surface collection of liquids, does not become part of and can be removed). Since "like" adsorbs "like", non-polar organics are readily held by carbon. Aromatic and aliphatic hydrocarbons such as benzene, gasoline, diesel fuel, oil, grease, toluenes,

and xylenes fall into this category. Also included are many organics associated with pesticides, cleaning compounds, and natural organics.

One of the major problems with activated carbon is that it is fouled almost immediately by dissolved or emulsified hydrocarbons. At its best, GAC is 25% efficient. However, when wet, actual data shows GAC to have a 1% to 15% efficiency, and after being fully exhausted, can allow hydrocarbons to leach back into the water stream. In general, the capacity of the best activated carbon is to adsorb 25% of its own weight in contaminants. While most activated carbon can be regenerated, each regeneration reduces its effective capacity. Most commonly used activated carbon for filtering waste water is in the 1 to 15% capacity range.

## ENHANCED TECHNOLOGY

In December, 1992, a new filtration media, PetroLOK™ PL22, was created. It is a proprietary blend of an advanced hydrophobic elastomeric polymer and activated carbon capable of absorbing up to 4 times its own weight in hydrocarbon contaminants. The polymer itself has been used since 1991 to absorb and bond hydrocarbons in spill response situations. It is so effective that it can remove hydrocarbons to not detect in minutes and bonds the hydrocarbons permanently. It was not usable in a filter because it would almost immediately plug. In late 1992, it was discovered that if mixed with other ingredients and blended in a special way with activated carbon, it became a sensational filter media.

The results are startling. This media stands alone and has no equal as a replacement for activated carbon in filtration applications.

### *Consider The Following:*

PetroLOK™ PL22 media has at minimum 20 times the capacity for hydrocarbon pickup (if 100 lbs of activated carbon will pickup 20 lbs, 100 lbs of PL22 can pick up to 400 lbs of petro hydrocarbons).

PetroLOK™ PL22 media on average is 400% efficient, where activated carbon at its best is only 25% efficient.

PetroLOK™ PL22 media reduces the cost of filtration treatment by 30% or more. Even greater savings are realized when labor and disposal costs associated with dealing with 20+ times the volume of activated carbon are calculated.

PetroLOK™ PL22 media can remove most hydrocarbon contaminants to acceptable discharge requirements with retention time as low as three minutes.

PetroLOK™ PL22 filtration media is a blend of proprietary polymers and activated carbon designed to capture hydrocarbons and VOC's after removal of free hydrocarbon product. The polymer is hydrophobic (hates water), and can absorb (take in; transform into a different form; bond) up to 15 times its own weight of hydrocarbons.

The proprietary mixture can remove up to 4 times its own weight of hydrocarbons. This translates to both efficiency and capacity. PetroLOK™ PL22 can be as much as 40 times more efficient than GAC.

After removal from the filtering process and sitting for 24 hours, the polymer is so effective it will leach hydrocarbon contaminants from the activated carbon and bond them. The resultant bonded mix has passed TCLP testing. The expended media can then be land filled or incinerated according to local requirements.

A caution at this point, PetroLOK™ PL22 does not work the same way as activated carbon. When the media is loaded to approximately 80% of capacity, the back pressure through the filter bed essentially doubles. This indicates it is time to change the media. The waste stream should not break through. The useful capacity of PetroLOK™ PL22 is 1,816,000 mg of hydrocarbon per one pound of media (4:1 ratio by weight). However, absorption ratios will vary when filtering chlorinated solvents and VOC's. The ratios can vary from 4:1 to 1:1.

## *Contaminants Removed*

The following contaminants can be successfully removed from waste water using PetroLOK™ PL22 filter media. The critical variable for degree of removal is residence time (contact time with the media bed). As a rule of thumb, to get contaminants to less than 1 PPB requires 3 minutes for BTEX, 4 minutes for light chlorinated hydrocarbons, and 5 minutes for mixed chlorinated hydrocarbons at levels above 20 PPM.

1,1,2-Trichloroethane	DBCP	PCB's
1,1-Dichloroethane	Diedrin	Petroleum Oils
1,1-Dichloroethylene	Diesel Fuel	Phenol Compounds (some)
1,2,3-Trichloropropane	Endrin	Phthalates
1,2-Dichloroethane	Pyrens	1,2-Dichloropropane
Flourens (some)	Acetone	Gasoline
THM's	Benzene	Halogenated Hydrocarbons
Toluene Compounds	BHC's	Lindane
Toxaphene	Benzo Compounds	Methylene Chloride
Trichloroethylene (TCE)	Naphthalenes	Xylenes
Chlorine	Nitro Compounds	

## *COST CONSIDERATIONS*

Depending on volume and efficiency ratings of activated carbon, the cost of PetroLOK™ PL22 is from 10 to 20 times higher than activated carbon. The price of the product, however, is only relevant as an input for determining the cost of removal of contaminants. The first consideration to any user is comparison to current cost. If hydrocarbon contaminated waste water is simply pumped and hauled away for treatment and disposal, the cost can run as high as \$3.00/gal., as low as \$.28/gal, with a national average running around \$.40/gal.

The cost of activated carbon in a pump-and-treat system can run from \$.75/lb. to \$2.50/lb. depending on the quality and the efficiency of the product. It is generally found that the less efficient the activated carbon, the lower the cost per pound. While activated carbon can be regenerated, the efficiency generally is reduced with each regeneration. A major consideration here is the cost of handling and transport. If the

activated carbon is 20% efficient, one needs 20 times more GAC than PetroLOK™ PL22 to remove the same level of contaminants. If the activated carbon is 10-12% efficient (national average), one needs up to 40 times more.

Calculate the cost of removing 100 mg/l of TPH (Total Petroleum Hydrocarbons) from a waste stream to not detectable levels. One hundred pounds (100 lbs.) of PetroLOK™ PL22 media can clean 477,900 gallons of waste water to not detectable. The cost to treat each gallon would then be the retail cost of PetroLOK™ PL22 divided by 477,900 gallons of wastewater. To accomplish the same removal in activated carbon, 100 pounds could treat 24,000 gallons of waste water at 20% efficiency or 12,000 gallons at 10% efficiency. The treatment cost would then be the retail cost of the activated carbon in dollars divided by either 24,000 or 12,000. Generally, the PetroLOK™ PL22 will average 30% lower in material cost.

The total cost, however, must take into account the handling and disposal of the used product. If 100 pounds of PetroLOK™ PL22 will filter 477,900 gallons of water contaminated to 100 PPM, it will take from 2,000 to 4,000 lbs of activated carbon to do the same. This is 20 to 40 times the quantity of material to receive, handle and remove for regeneration or disposal. This is where the significant cost reduction of PetroLOK™ PL22 is evident.

## CURRENT APPLICATIONS

- A. An installation at American Marine Corporation (AMC) in New Orleans pumps bilge's and degasses barges in their operation. They were running an OWS on the bilge water, then paying to have the water hauled away. AMC's net cost was \$.34/gal. after oil recovered was sold. The waste water contained 370 PPM of dissolved hydrocarbons. After filtering through a 10 GPM system, the effluent contained less than 4 PPM hydrocarbons. AMC received a permit form the State of Louisiana Department of Environmental Quality to discharge into the Mississippi. The cost for this treatment is less than \$.01/gal.
- B. Kentucky Marine of Greenville, MS installed a similar system at their location and received a discharge permit from the State of Mississippi to discharge into the Mississippi River.
- C. Delta Auto, Alabama, manufacturing automotive parts. A 10 GPM filtration system utilizing PL22 has been installed and is meeting the discharge regulation that are specified by the state of Alabama.
- D. Alcoa has installed a 10 GPM system for removal of hydrocarbons and PCB's from contaminated water which also includes an OWS, a clarifier, particulate filter and aeration.
- E. Ryder Truck is filtering waste water with a 10 GPM system.
- F. An Exxon tank farm has a 15 GPM system to reduce BTEX levels to discharge requirements.
- G. A power company in Maryland and Virginia is filtering waste water from transformers to remove PCB's.

- H. A shipping company on the Great Lakes is installing bilge treatment systems on all of its ships to meet the recent Great Lakes standard of 5 PPM. This is soon to be lowered to 0 PPM. Their potential fine for non-compliance is \$7,000/day. PetroLOK™ PL22 meets their requirements.
- I. Reese Air Force base in Texas has installed a system to remove 45 PPB of a chlorinated solvent to ND (< 1 PPB). The theoretical bed life is estimated at 65 years.
- J. The Department of Environmental Regulations (DER) of Pennsylvania has recommended the use of PetroLOK™ PL22 to filter a holding pond containing 200,000 gallons of water contaminated with 15 PPB of benzene.
- K. Colonna's Shipyards 100 GPM filtration system analytical test data shows effluent water at not detectable PPM off TPH. Have received discharge permit to discharge water into the Elizabeth River. Virginia regulation is 5 PPM allowable.
- L. Taylor Environmental Products, Inc. Louisville, Mississippi manufactures Oil Water Separators (OWS) that utilize PL22 for final polish before discharge to meet federal discharge requirements.
- M. Amoco Offshore oil platform has installed a 75 GPM system to meet the water discharge requirements. Maximum allowable discharge is 29 mg/L, the discharge water being filtered through PL22 is at <3 mg/L.
- N. Iowa D.O.T. installed three 40 GPM filtration systems to handle water discharge requirements at maintenance facilities.
- O. Limited Leasing, St. Louis, operates riverboats on the Mississippi. They have installed a 10 GPM filtration system to meet the water discharge requirements to get by U.S.C.G.
- P. Apogee Environmental has purchased two mobile filtration systems. One 10 GPM system and one 100 GPM system. Both designed to remove TPH and lead.

## SUMMARY

PetroLOK™ PL22 filtration media is quickly being recognized as the best available technology (BAT) for applications requiring the removal of floating, dissolved or emulsified hydrocarbons from waste water by filtration.

1. It is extremely efficient.
2. It has a high capacity (each pound will absorb up to 4 pounds of hydrocarbon).
3. It is not subject to breakthrough when used properly.
4. It is fast (reduced retention times mean lower bed volumes required).
5. It saves money compared to other filtration treatments.

## **ADDENDUM - ENVIRONMENTAL REGULATIONS**

Allowable levels of hydrocarbon discharge vary from city-to-city and state-to-state. Discharge regulation's for the most part are getting tighter and enforcement stricter. Today we are faced with two types of discharge requirements.

- I. Industrial Discharge: Water contamination regulated by waste water management Total Oil and Grease (TOG) Total Petroleum Hydrocarbon (TPH). The discharge requirements for waste water management will vary from city-to-city. Example: 1) Washington State varies by location, range 12 25 mg/l to 100mg/l; 2) Louisville, Kentucky 10 PPM/TOG; 3) Ft. Wayne, Indiana 400 PPM/TOG; 4) Boston, Massachusetts 30 PPM/TOG.
- II. Industrial Discharge: US EPA adopted regulations for storm water discharges from certain industrial sites known as National Pollutant Discharge Elimination System (NPDES), November 1990.

The NPDES identifies industrial discharge as toxic pollutants effluent and requires industry to meet the maximum contaminant levels (MCL) for specific pollutants.

NPDES REQUIREMENTS have been considered by EPA for parking lot run-off and a few states have now brought forth regulations requiring filtration for stromwater run off.

Either case requires that new technologies which can process large or small volumes of waste water or storm run-off at reasonable cost are necessary. PetroLOK™ PL22 is one such technology which can be used by public water systems, large industrial users, small business owners and environmental and engineering consultants looking for economic alternatives.

## **FEDERAL REGULATIONS AND ENFORCEMENT**

Allowable concentrations of hydrocarbons and volatile organic compounds (VOC's) are continuing to be reduced. Twenty years ago the regulations were considered very lax compared to the discharge regulation of today However, the regulations today for acceptable discharge will not be acceptable tomorrow.

US EPA is continuing to regulate the acceptable levels of water contamination and have incorporated enforcement of regulations by the following acts:

- Resource Conservation and Recovery Act (RCRA) \* Clean Air Act (CAA)
- Comprehensive Environmental Response, Compensation and Liability Act (CERCLA or Superfund)
- Endangered Species Act
- Rivers and Harbors Act of 1899 (The Refuse Act)
- Marine Protection, Research and Sanctuaries Act of 1972 (The Ocean Dumping Act)

**Resource Conservation And Recovery Act.** 42 U.S.C. Sections 6901 et seq. govern the generation, transportation, storage, treatment and disposal of hazardous waste. Section 6928 (d) states that to knowingly store, treat, transport or dispose of hazardous waste in violation of the statute, implementing regulations, or one's permit is punishable by 5 years in jail and \$50,000/day of violation. To knowingly violate the Act's record keeping, reporting, or manifesting provisions is punishable by 2 years in jail and \$50,000/day of violation. To knowingly place another in imminent danger of death or serious bodily harm is punishable by 15 years in jail and a \$250,000 fine.

**Clean Air Act (CAA).**

42 U.S.C. Sections 7401 et seq. govern the emission of hazardous air pollutants. Section 7413 (c) states that to knowingly violate almost any provision on inspections, new source, performance standards, or permit provisions is punishable by 5 years in jail and a \$250,000 fine. To knowingly violate the Act's recordkeeping, reporting, or manifesting provisions is punishable by 2 years in jail and \$250,000/day of violation. Negligent release of a hazardous air pollutant that places another in imminent danger of death or serious bodily harm is punishable by 1 year in jail and a \$250,000 fine. Knowingly, rather than negligent, release is punishable by 15 years in jail and a \$250,000 fine.

**Clean Water Act (CWA, also known as the Federal Water Pollution Control Act).**

33 U.S.C. Sections 1251 et seq. govern the discharge of pollutants into waters of the United States. Section 1319 (c) states that negligence violation of almost any provision, for example, on permit effluent limitations and wetland permits is punishable by 1 year in jail and a \$25,000. Knowing, rather than negligent, violation is punishable by 3 years in jail and a \$250,000 fine. Knowing that which places another in imminent danger of death or serious

bodily harm is punishable by 15 years in jail and a \$250,000 fine.

**Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, or "Superfund").** 42 U.S.C. Sections 9061 et seq. govern the notification and cleanup of spill or releases of hazardous substances into the environment. Section 9603 (b) states that knowing failure of a person in charge to report unpermitted release of certain hazardous substance is punishable by 3 years in jail and a \$250,000 fine.

**Endangered Species Act.**

16 U.S.C. Section 1540 (b) states that to knowingly violate almost any provisions of the Act, for example, prohibiting adverse impact, (broadly defined) or their designated habitat is punishable by 6 months in jail and \$25,000 fine.

**Rivers an Harbors Act of 1899, (the Refuse Act).** 33 U.S.C. Sections 401 et seq. govern any construction near or obstruction of U.S. navigable waters. Sections 407 & 411 state that an unpermitted discharge of any refuse matter of any kind or description whatever other than that flowing from streets and sewers and passing therefrom in a liquid state, into any navigable body of water or into any tributary of any navigable water is punished by 1 year in jail and a \$2,500 fine.

**Marine Protection, Research, and Sanctuaries Act of 1972, (the Ocean Dumping Act).**

33 U.S.C. Sections 1401 et seq. govern dumping of material into the ocean. Section 1411 and 1415 (b) state that unpermitted transportation of any material for the purpose of dumping it into ocean waters is punishable by a fine of not more than \$50,000, or imprisonment for not more than one year, or both.

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# **AN AWS, INC. FILTRATION TECHNOLOGY PRODUCT**

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## **PetroLOK™ PL22**

(PATENT PENDING)

**PetroLOK™ PL22** is a non-toxic, non-corrosive environmentally friendly water filtration media.

**PetroLOK™ PL22** filtration media will not only ADSORB hydrocarbon contamination, but also LOCKS IN THE HYDROCARBON, thus reducing the risk of hydrocarbon leaching during water filtering applications.

**PetroLOK™ PL22** combines the effect of adsorb and absorb for maximum efficiency. **PetroLOK™ PL22** can be up to FORTY (40) times more efficient than using typical carbon adsorbents.

## **PetroLOK™ PL22 FACT SHEET**

<b>WEIGHT BY VOLUME</b>	One pound equals 96 cubic inches. One cubic foot equals 18 pounds
<b>ABSORPTION CAPACITY</b>	1,816,000 milligrams hydrocarbon per one pound PL22
<b>SPECIFIC GRAVITY</b>	.932 proximate
<b>PH SPECIFICATIONS</b>	Neutral (6.5 to 7)
<b>STORAGE</b>	Keep free of contamination
<b>VOLATILITY BEFORE USE</b>	None
<b>VOLATILITY AFTER USE</b>	Varies with flammability of liquid bonded
<b>DISPOSAL</b>	Caution should be exercised. Dispose of in accordance with federal, state and local laws for bonded liquid
<b>PACKAGING</b>	<b>PetroLOK™ PL22</b> is packaged in 14 pound bags (.77 cubic feet) or 900 pound bulk containers (50 cubic feet)
<b>TOXICITY</b>	Non-Toxic, Non-Hazardous, Non-Corrosive
<b>NOTICE</b>	All statements, technical information and recommendations contained herein are based on information and tests we believe to be reliable. The accuracy or completeness thereof is not guaranteed.

# Standards for Calculating Liquid Phase Filter Beds for PetroLOK PL22

## Contaminant Generation

$$(1)a \quad \frac{3.8}{\text{liters/gal}} \times \frac{\text{GPM}}{\text{GPM}} \times \frac{\text{PPM}}{\text{PPM}} \times \frac{\text{min/day}}{\text{min/day}} = \frac{\text{Daily Contaminant Generation}}{\text{mg}}$$

$$(1)b \quad \frac{3.8}{\text{liters/gal}} \times \frac{\text{GPD}}{\text{GPD}} \times \frac{\text{PPM}}{\text{PPM}} = \frac{\text{Daily Contaminant Generation}}{\text{mg}}$$

## Filter Bed Calculations by Minutes of Residence Time

$$(2) \quad \frac{\text{GPM}}{\text{GPM}} \times \frac{* \text{ Residence Time in Min}}{\text{* Residence Time in Min}} \div \frac{7.48}{\text{Gal. per cu. ft.}} = \frac{\text{Bed Volume}}{\text{cubic feet}}$$

$$(3) \quad \frac{\text{Bed Volume in cubic ft.}}{\text{Bed Volume in cubic ft.}} \times \frac{18}{\text{Density PCF of PL22}} = \frac{\text{Bed Weight PL22 in pounds}}{\text{Bed Weight PL22 in pounds}}$$

$$(4) \quad \frac{\text{Bed Weight PL22 in pounds mg/lb.}}{\text{Bed Weight PL22 in pounds mg/lb.}} \times \frac{1,816,000}{\text{Capacity of PL22}} = \frac{\text{Bed Absorb Capacity Generation}}{\text{Daily Contaminant Generation}} \div \frac{\text{Daily Contaminant Generation}}{\text{Bed Life}} = \frac{\text{Bed Life}}{\text{days}}$$

## Cost Per Gallon Treated

$$(5) \quad \frac{\text{Bed Weight PL22 in lbs.}}{\text{Bed Weight PL22 in lbs.}} \times \frac{\text{Retail \$ / lb.}}{\text{Retail \$ / lb.}} \div \frac{\text{Bed Life in Days}}{\text{Bed Life in Days}} \div \frac{\text{GPD or GPM x 1440}}{\text{GPD or GPM x 1440}} = \frac{\text{Cost in \$ / gallon}}{\text{Cost in \$ / gallon}}$$

\*Residence Time      Minutes that the waste flow is exposed to the adsorb/absorb/bonding function of the media bed.  
 BTEX - 3 min.  
 Light chlorinated hydrocarbons - 4 min.  
 Mixed chlorinated hydrocarbons or levels above 20 PPM - 5 min.

International Note:       $\times$  = multiply  
 $\div$  = divide

## CURRENT APPLICATIONS

In less than 1 year  
**PetroLOK PL22**  
has been used in most  
of these applications

Airports	Military Bases
Asphalt Cleaning	Municipalities
Auto Repair Shops	Navy Ships
Car Washes	Oil Refineries
Coal Mines	Parts Washing Firms
Gas Stations	Plastics Industry
Ground Water Remediation	Power Companies
Hydroelectric Dams	Printing Industry
Industrial Laundries	Rail Yards
Marine Industry - Bilge's	Steel Mills
Metal Plating Industry	Waste Water Treatment Plants

## PERFORMANCE DATA

The following represents actual applications at installations around the country. While the data is summarized, the actual data is available upon request. the filtration systems are being used to meet or exceed discharge regulations.

<b>CUSTOMER</b>	<b>Final polish after OWS (oil-water separator) removing BTEX and reducing TPH below 15 mg/l.</b>		
<i>American Marine</i> <i>New Orleans, LA.</i>	Total Oil & Grease	370. mg/l.	3.8 mg/l. 3/93
<i>Bilge Water Application</i>	Bilge Water & BTEX	54.3 mg/l.	12.4 mg/l. 5/21/93
<i>Test Report MSI-001</i>	Toluene	5.6 ug/l.	ND 5/21/93
<i>ETC/Gulf South Labs</i>	Ethylbenzene	10 ug/l.	ND 5/21/93
	Xylene	26 ug/l.	ND 5/21/93

**Final polish to remove BTEX and reduce TPH below 15 mg/l.**

<b>Mississippi Marine</b>	<b>Influent</b>	<b>Effluent</b>	<b>Date</b>
<i>Greenville, MS.</i>	Acetone	500 ug/l.	140 ug/l. 3/11/93
<i>AM Test ID 93-A003582*</i>	2-Butanone (MEK)	250 ug/l.	85 ug/l. 3/11/93
<i>AM Test ID 93-A003584**</i>	Benzene	950 ug/l.	< 5 ug/l. 3/11/93
<i>VOC (EPA 624)</i>	Toluene	190 ug/l.	< 5 ug/l. 3/11/93
	Xylene	900 ug/l.	< 1 ug/l. 3/11/93
	Final Oil & Grease		4 mg/l. 4/9/93

<i>Winona Van Norman</i> <i>Winona State University</i> <i>Winona, MN.</i>	Cleaning wash water which contains detergent to below limit of 200	<u>Influent</u>	<u>Effluent</u>	<u>Date</u>
	Total Oil & Grease	1048 mg/l.	137 mg/l.	6/21/93

**Reduce total oil, grease and BTEX**

<i>Dakota Barge</i> <i>St. Paul, MN.</i>	<u>Influent</u>	<u>Effluent</u>	<u>Date</u>
<i>FID Flame Ionization Detector</i>	Total Oil & Grease	110 mg/l.	< 2 mg/l. 9/14/93
	Benzene	24 mg/l.	ND 9/14/93
	Toluene	52 ug/l.	5 ug/l. 9/14/93
	Ethylbenzene	18 ug/l.	ND 9/14/93
	Xylenes	57 ug/l.	7 ug/l. 9/14/93
	FID Scan-Gasoline	< 5 mg/l.	< 5 mg/l. 9/14/93
	FID Scan #2 Fuel Oil	6.4 mg/l.	1.4 mg/l. 9/14/93

**Reduce TPH in flight deck drains to below 5 mg/l.**

<i>US Navy-Catapult Drain</i> <i>NNS Laboratory Services</i> <i>Lab #93-015610</i>	<u>Influent</u>	<u>Effluent</u>	<u>Date</u>
	Total Oil & gas (EPA Method 413.1)	66.7 mg/l.	1.4 mg/l. 12/14/93

**Reduce VOC level in wash water from printing press.**

<i>Printing Company</i> <i>ID #93-003190</i> <i>(VOC EPA 624)</i>	<u>Influent</u>	<u>Effluent</u>	<u>Date</u>
	Xylenes	11,000 ug/l	900 ug/l 3/9/93

**Tests to determine effect of retention time on VOC removal  
from waste stream. All data is in ug/l (parts/billion). Each  
column represents retention time in bed.**

	<u>Influent</u>	<u>3 Min.</u>	<u>4 Min.</u>	<u>5 Min.</u>	<u>7 Min.</u>
<i>Holland, MI.</i>					
<i>Test Performed to Reduce VOC's</i>	Benzene	21	< 1	< 1	< 1
<i>Job #8468</i>	Bromodichloromethane	69	36	< 1	< 1
<i>6/9/93</i>	Chloroform	19	35	< 1	< 1
	1,2-Dichlorobenzene	33	< 1	< 1	< 1
	1,1-Dichloroethane	2722	1467	1	17
	1,1-Dichloroethene	2930	1990	21	26
	Ethyl Benzene	154	31	< 1	< 1
	Methylene Chloride	18450	15050	160	120
	Tetrachloroethane	4370	1625	11	2
	Toluene	670	101	< 1	< 1
	1,1,1-Trichloroethane	20695	14620	871	216
	1,1,2-Trichloroethane	585	245	5	< 1
	Trichloroethene	2803	740	2	3
	Xylenes	1147	150	< 3	< 3

Tests to determine effect of retention time on VOC removal from waste stream. All data is in ug/l (parts /billion). Each column represents retention time in bed.

*Holland MI.*

*Test Performed to Reduce VOC's*

*Job #8606 (ENHANCED PL22*

*FORMULATION)*

*8/23/93*

	<u>Influent</u>	<u>3 Min.</u>	<u>5 Min.</u>	<u>7 Min.</u>
Benzene	21	< 1	< 1	< 1
Bromodichloromethane	69	< 1	< 1	< 1
Chloroform	19	2	2	1
1,2-Dichlorobenzene	33	< 1	< 1	< 1
1,1-Dichloroethane	2722	12	21	16
1,1-Dichloroethene	2930	14	14	< 5
Ethyl Benzene	154	< 1	< 1	< 1
Methylene Chloride	18450	46	48	43
Tetrachloroethane	4370	24	24	34
Toluene	670	< 1	< 1	< 1
1,1,1-Trichloroethane	20695	8	11	20
1,1,2-Trichloroethane	585	6	< 1	< 1
Trichloroethene	2803	< 1	< 1	< 1
Xylenes	1147	< 3	< 3	< 3

## REMEDIATION FIELD RESULTS

E.S.I.  
Indianapolis, IN.

*Marathon Oil Co.*

*Tank Farm*

*Test Method EPA 624*

*Flow Rate: 40 GPM*

	<u>Influent</u>	<u>Effluent</u>	<u>Date</u>
TSS	21 mg/l.	0 mg/l.	10/3/94
TPH	12.8 mg/l.	< 0.1 mg/l.	10/3/94
Benzene	0.211 mg/l.	< .0001 mg/l.	10/3/94
Toluene	0.192 mg/l.	< .0001 mg/l.	10/3/94
Ethyl Benzene	0.106 mg/l.	< .0001 mg/l.	10/3/94
Xylene	0.765 mg/l.	< .001 mg/l.	10/3/94

*GM Plant*

*Test Method EPA 624*

*Flow Rate: 30 GPM*

PCB's	40 mg/l.	ND	10/3/94
Chromium (1)	0.02 mg/l.	< 0.01 mg/l.	10/3/94
Lead	0.16 mg/l.	< 0.01 mg/l.	10/3/94
TSS		5 mg/l.	10/3/94
FOG		< 5 mg/l.	10/3/94

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## REMEDIATION PROJECT

### SAN FRANCISCO BAY AREA

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Containment pond filling with runoff from heavy spring rains. A 50 gpm filtration system using PetroLOK PL-22 was utilized to remove influent contaminant as noted by testing to discharge levels into San Francisco Bay. First test sampling April 11, 1995, last test sampling May 23, 1995. Total approximate gallons of water filtered through PL-22, 2.1 million.

*Brown & Caldwell  
San Francisco, CA.*

	<u>Influent</u>	<u>Effluent</u>	<u>Date</u>
C-1,2 - Dichloroethene	6.3 ug/l.	< 0.5 ug/l.	4/11/95
Trichloroethene	18 ug/l.	< 0.5 ug/l.	4/11/95
1,1 Dichloroethene	.69 ug/l.	< 0.5 ug/l.	5/23/95
T-1,2 - Dichloroethene	.56 ug/l.	< 0.5 ug/l.	5/23/95
C-1,2 - Dichloroethene	61 ug/l.	5.0 ug/l.	5/23/95
1,1,1 Trichloroethene	.54 ug/l.	< 0.5 ug/l.	5/23/95
Trichloroethene	24 ug/l.	< 0.5 ug/l.	5/23/95

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## MARINE APPLICATIONS

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*Colonna's Shipyard  
Norfolk, VA*

<u>Influent</u>	<u>Effluent</u>	<u>Date</u>
TPH	50 mg/l.	ND 4/1/95

*AMOCO  
Off Shore Oil Platform  
Flow Rate 75 GPM*

<u>Influent</u>	<u>Effluent</u>	<u>Date</u>
W.S.O. (Water Soluble Organic)	100 mg/l. < 3 mg/l.	3/24/95

### **SHEEN VAC**

Sheen Vac filtration equipment utilizes PetroLOK PL-22 media to remove and absorb hydrocarbons from navigable surface waters..

**California Regional Water Quality Control Board Acceptance of SHEEN VAC, 11/21/94.**

**SLIC:** Discharge of Surface Oil Spill Cleanup Water NPDES not needed to remove sheens of small volumes on surface waters when water is filtered through SHEEN VAC equipment.

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## APOGEE ENVIRONMENTAL PetroLOK™ PL22 FILTRATION SYSTEM

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		<u>Influent</u>	<u>Effluent</u>	<u>Date</u>
<i>Ft. Wayne</i>	BTEX	22,060 ug/l.	ND	3/15/95
<i>Remediation Site</i>	Lead (Pb)	14 ug/l.	ND	3/15/95
<i>Total Water process 6,000 gal.</i>				
<i>St. Louis</i>	BTEX	470 ug/l.	1.9 ug/l.	3/15/95
<i>Remediation Site</i>	Lead (Pb)	7 ug/l.	ND	3/15/95
<i>Total Water Process 1,100 gal.</i>				

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## TRUCK / HEAVY EQUIPMENT SERVICE CENTER

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		<u>Influent</u>	<u>Effluent</u>	<u>Date</u>
<i>Ryder Truck</i>				
<i>Test Method EPA 413.1</i>	TOG	50 mg/l.	ND	12/1/94
<i>Test Method</i>	Acetone	71 ug/l.	ND	12/1/94

Application PL22 as polishing filter for Oil Water Separator (OWS)

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## REESE AIR FORCE BASE

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		<u>Influent</u>	<u>Effluent</u>	<u>Date</u>
<i>Reese AFB</i>				
<i>Test Method EPA 524.2</i>	TCE	50 ug/l.	< 0.5 ug/l.	10/29/93 & 2/3/94

To meet Maximum Contaminant Level (MCL) as published in the Safe Drinking Water Act. Title 40 Code of Federal Regulations, Part 141.23